No. 643,940. Patented Feb. 20, 1900.

J. BROOKS & W. S. HUSON.

E. BROOKS, Executrix of J. BROOKS, Dec'd.

REGISTER GEARING FOR PRINTING PRESSES.

(Application filed June 15, 1899.)

(No Model.) 4 Sheets—Sheet 1.

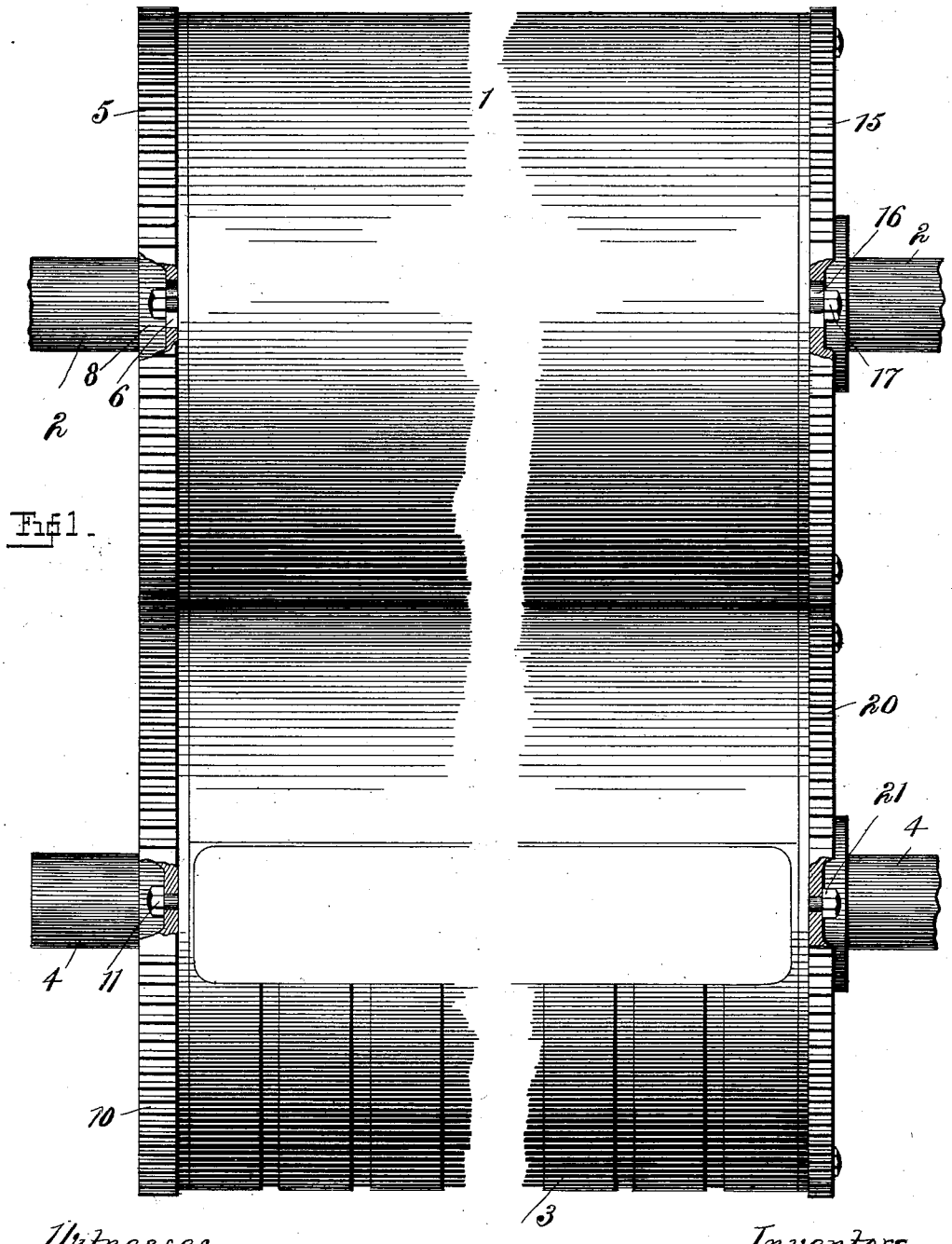

Fig 1.

Witnesses
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By Munn & Co
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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(No Model.) 4 Sheets—Sheet 2.

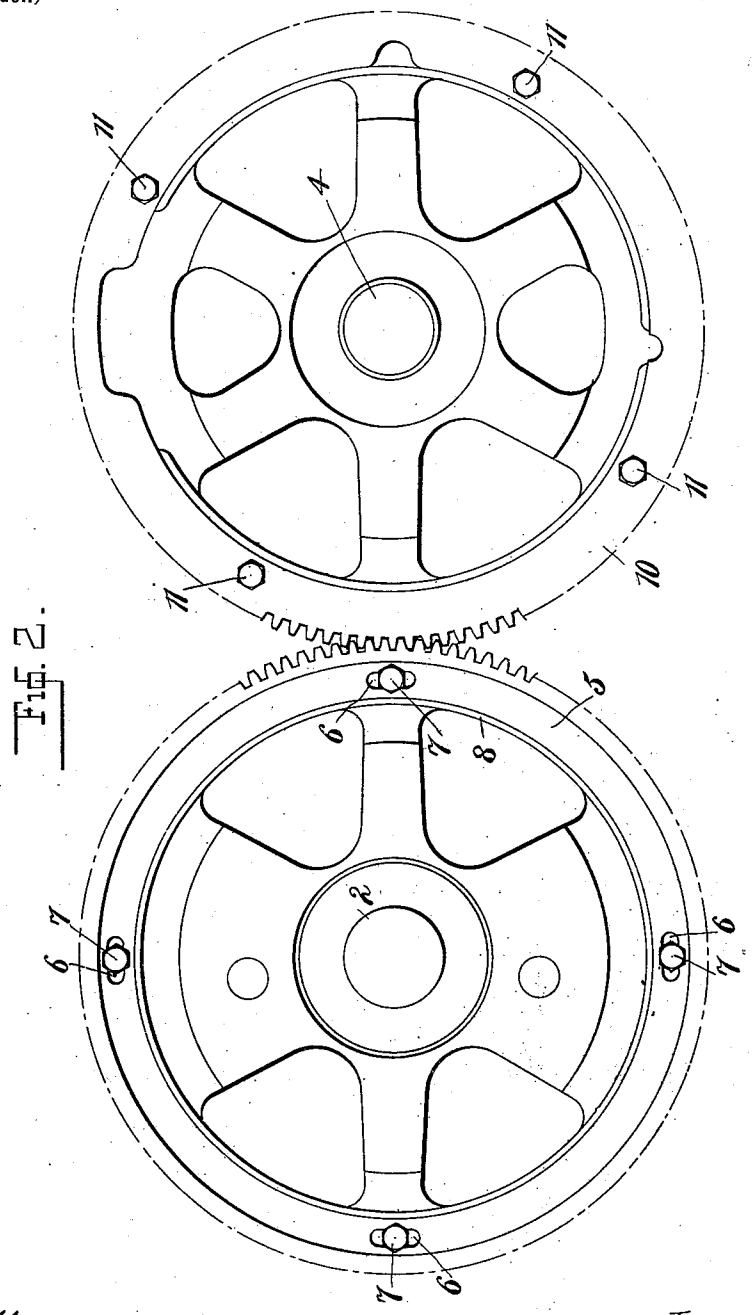

FIG. 2.

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(No Model.) 4 Sheets—Sheet 3.

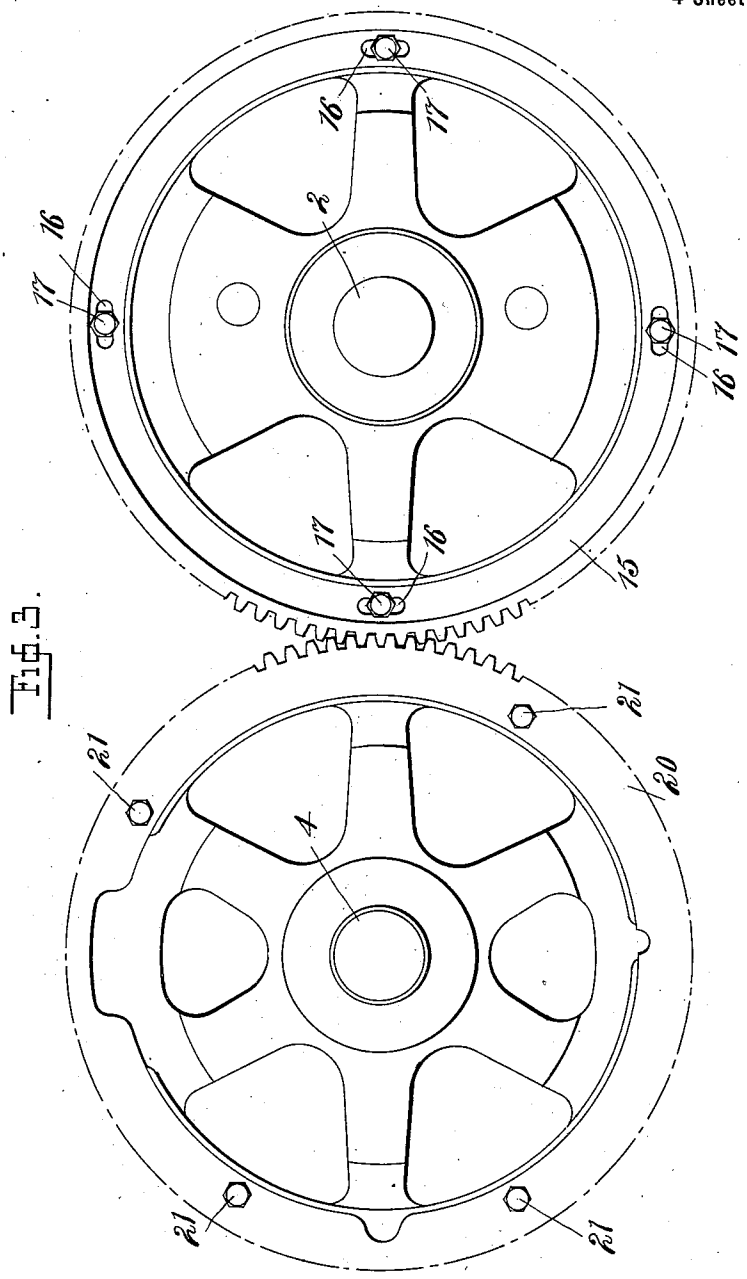

Fig. 3.

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No. 643,940. Patented Feb. 20, 1900.

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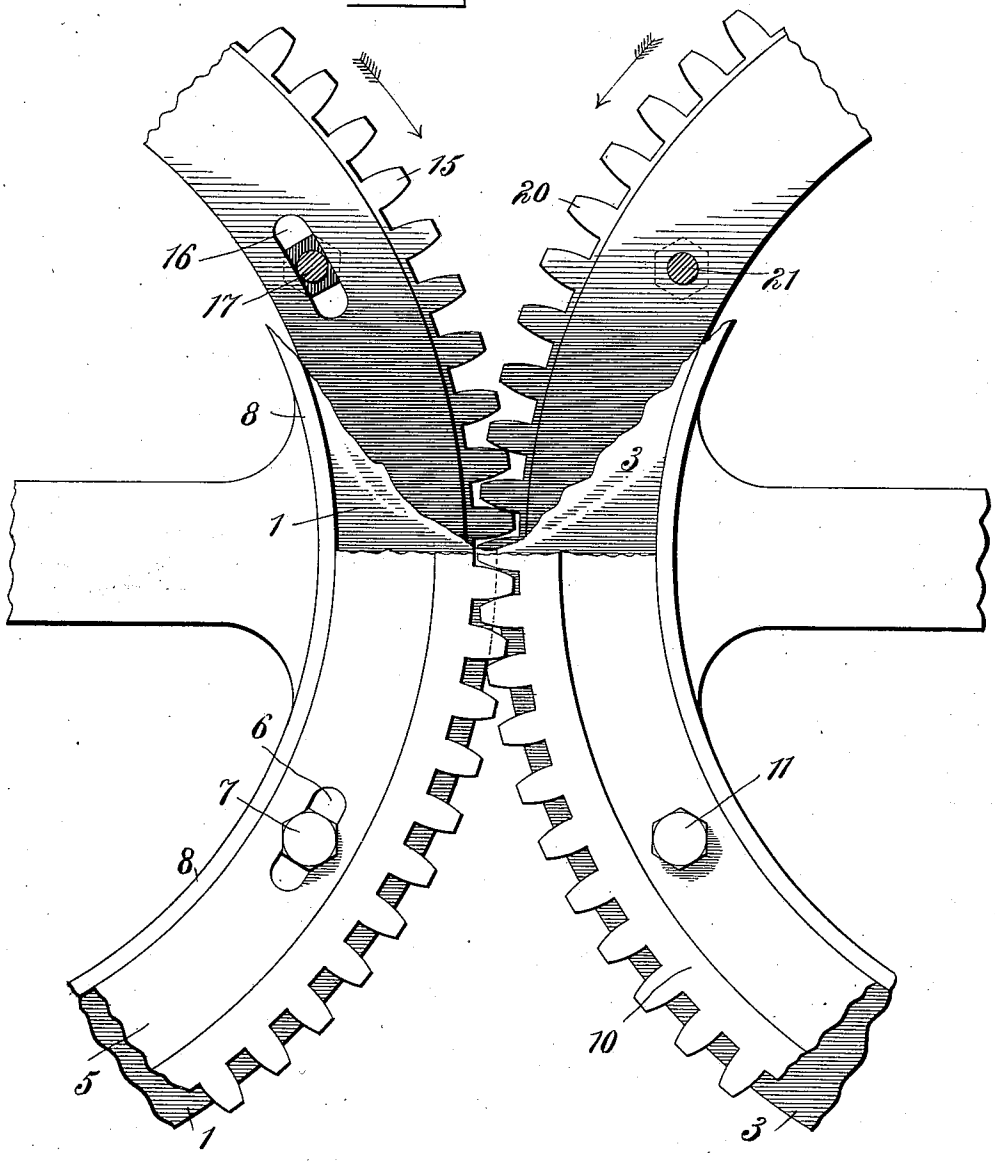
(Application filed June 15, 1899.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 4.



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UNITED STATES PATENT OFFICE.

ELIZABETH BROOKS, EXECUTRIX OF JOHN BROOKS, DECEASED, AND WINFIELD S. HUSON, OF PLAINFIELD, NEW JERSEY, ASSIGNORS TO THE ALUMINUM PLATE AND PRESS COMPANY, OF SAME PLACE AND NEW YORK, N. Y.

REGISTER-GEARING FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 643,940, dated February 20, 1900.

Application filed June 15, 1899. Serial No. 720,632. (No model.)

To all whom it may concern:

Be it known that we, ELIZABETH BROOKS, executrix of the estate of JOHN BROOKS, deceased, and WINFIELD S. HUSON, citizens of the United States, and residents of Plainfield, in the county of Union and State of New Jersey, believe that said JOHN BROOKS and WINFIELD S. HUSON did invent certain new and useful Improvements in Register-Gearing for Printing-Presses, of which the following is a full, clear, and exact description.

This invention relates to improved means for preserving exact register between the plate-cylinder and impression-cylinder of a rotary printing-machine in which the sheet to be printed is carried upon the impression-cylinder. According to the present invention the two cylinders are geared together at both ends by pairs of gears suitably secured to the cylinders, one gear of each pair being adjustable circumferentially of the cylinder, while the other gear of each pair is rigid upon the cylinder. Upon the opposite ends of the impression-cylinder suitable driving-gears are secured by means of tap-bolts passing through holes in the gears and ends of the cylinder, while upon the opposite ends of the plate-cylinder are adjustably mounted other gears which mesh with the gears on the impression-cylinder. The plate-cylinder gears are adjustably mounted upon the plate-cylinder by means of bolts passing through elongated slots cut through the gears.

The importance of the improved structure will be clear from the following considerations: If only one pair of gears were employed at one end of the plate and impression cylinders, it is apparent that in case the cylinders are separated slightly either to allow for the variation of thickness in the stock to be printed or for the variation of the height of the form or plate upon the plate-cylinder the gears would be correspondingly separated, and on account of the shape of the gear-teeth there would be more or less backlash between the intermeshing teeth. With the improved structure and arrangement of gears it will be observed that should it be necessary to separate the cylinders for any purpose such as above indicated the adjustable gears at the ends of the plate-cylinder can readily be adjusted with relation to the stationary gears upon the impression-cylinder by simply loosening the securing-bolts and moving the gears circumferentially forward or backward upon the plate-cylinder. In this way the gears are so set or adjusted that the intermeshing teeth of the adjustable and fixed gears at one side of the press will engage on their faces opposite to the engagement of the corresponding intermeshing teeth of the adjustable and fixed gears at the opposite side of the press. In this manner the plate-cylinder being driven at one end by a suitable operating mechanism may be considered to rotate the corresponding end of the impression-cylinder and the opposite end of the impression-cylinder to transmit its motion to the opposite end of the plate-cylinder, so that the opposite ends of the two cylinders are positively driven by the gears without any possibility of backlash and without danger of interfering with the register of the sheets upon the impression-cylinder with the form or plate upon the plate-cylinder.

In order that the invention may be fully understood, it will first be described with reference to the accompanying drawings and afterward pointed out with more particularity in the annexed claims.

In said drawings, Figure 1 is a detail plan view, partly broken away, representing a plate-cylinder and an impression-cylinder provided with the fixed and adjustable gears arranged according to the present invention. Fig. 2 is a detail end elevation of the pair of intermeshing gears at the left-hand side of Fig. 1. Fig. 3 is a detail end elevation of the intermeshing gears at the right-hand side of Fig. 1. Fig. 4 is an enlarged detail view having parts broken away and representing portions of both pairs of intermeshing gears at the opposite ends of the plate and impression cylinders and showing the adjustable gearing at one end engaging downwardly with the fixed gear and upwardly with the fixed gear at the other end.

1 is the plate-cylinder, having gudgeons 2,

adapted to be journaled in a press-frame of any suitable construction, and 3 is the impression-cylinder, having gudgeons 4, also adapted to be journaled in the press-frame in proper relation to the plate-cylinder.

At the left-hand end of the plate-cylinder 1 is a large gear 5, formed with slots 6, through which pass the tap-bolts 7, seated in suitable threaded openings in the end of the plate-cylinder. The gear 5 rests upon a circular flange or hub portion 8 of the plate-cylinder and by reason of the elongated slots 6 can be adjusted circumferentially of the cylinder. The adjustable gear 5 meshes with a gear 10, rigidly secured to the left-hand end of impression-cylinder 3 by means of tap-bolts 11, which pass through circular openings in the gear 10 and are seated in suitable threaded openings in the impression-cylinder.

At the opposite or right-hand ends of the plate and impression cylinders are mounted an auxiliary set of gears, comprising the adjustable gear 15, formed with elongated slots 16, through which pass tap-bolts 17, seated in suitable threaded openings in the end of the plate-cylinder 1, and an intermeshing fixed gear 20, secured to the end of impression-cylinder 3 by means of tap-bolts 21, passing through circular openings formed in the gear 20 and seated in suitable threaded openings in the end of the impression-cylinder.

By suitably adjusting the main gear 5 and auxiliary gear 15 with relation to the main fixed gear 10 and auxiliary fixed gear 20 the exact register of the plate and impression cylinders is preserved.

In Fig. 4 is represented in a mutilated view both ends of the plate and impression cylinders. The adjustable main and auxiliary gears are so adjusted that the main adjustable gear 5 meshes with the main fixed gear 10, so that the advance faces of the teeth of gear 5 engage the rear faces of the teeth of gear 10 and the auxiliary fixed gear 20 meshes with auxiliary adjustable gear 15, so that the advance faces of teeth of gear 20 engage the rear faces of the teeth of gear 15. In other words, the adjustable gears are so adjusted with relation to the fixed gears that in the operation of the press the main adjustable gear 5 drives the main fixed gear 10 and the auxiliary fixed gear 20 drives the auxiliary adjustable gear 15. In this way all back lash is avoided and perfect register of the plate and impression cylinders is insured. By means of this arrangement it will be clear, also, that in case of wear of the gear-teeth the adjustable gears can be properly set up to compensate for the wear and the gearing of the cylinders by the adjustments can be maintained in perfect working order irrespective of the wear.

Another desirable feature obtained by the present invention is that the operator can set one of the cylinders to any desired position with relation to the other within the range of the elongated slots of the adjustable gears and at the same time preserve the feature of accurate register.

Having thus described the invention, what is claimed as new therein, and desired to be secured by Letters Patent, is—

1. In a printing-press, the combination of the plate and impression cylinders with the main adjustable and fixed intermeshing gears upon said cylinders and the auxiliary adjustable and fixed gears upon said cylinders, substantially as and for the purpose set forth.

2. In a printing-press, the combination of the plate and impression cylinders, the main adjustable gear adjustably mounted upon one end of the plate-cylinder, the main fixed gear secured to one end of the impression-cylinder and meshing with said main adjustable gear, the auxiliary fixed gear secured to the opposite end of the impression-cylinder, and the auxiliary adjustable gear adjustably mounted upon the opposite end of the plate-cylinder and meshing with said auxiliary fixed gear, substantially as set forth.

3. In a printing-press, the combination of the plate and impression cylinders, the main adjustable gear formed with elongated slots, the bolts passing through said elongated slots into the plate-cylinder at one end and adjustably securing said gear to the cylinder, the intermeshing main fixed gear secured to the end of the impression-cylinder, the auxiliary fixed gear secured to the opposite end of the impression-cylinder, and the auxiliary adjustable gear meshing with the auxiliary fixed gear and formed with elongated slots through which suitable bolts pass into the plate-cylinder to adjustably secure said auxiliary gear, substantially as set forth.

4. In a printing-press, the combination of the plate and impression cylinders, the two pairs of intermeshing driving-gears secured to the ends of said cylinders, one of each pair of said gears being adjustable and the other of each pair being fixed, substantially as set forth.

5. In a printing-press, the combination of the plate and impression cylinders, the two pairs of driving-gears secured to the ends of said cylinders, one of each pair of which is adjustable while the other of each pair is fixed, the intermeshing pairs of gears engaging each other upon opposite faces at the opposite ends of the cylinders, substantially as and for the purpose set forth.

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