(No Model.) 2 Sheets—Sheet 1.

H. BREUER.

PRINTING PRESS.

No. 511,113. Patented Dec. 19, 1893.

Fig. 1.

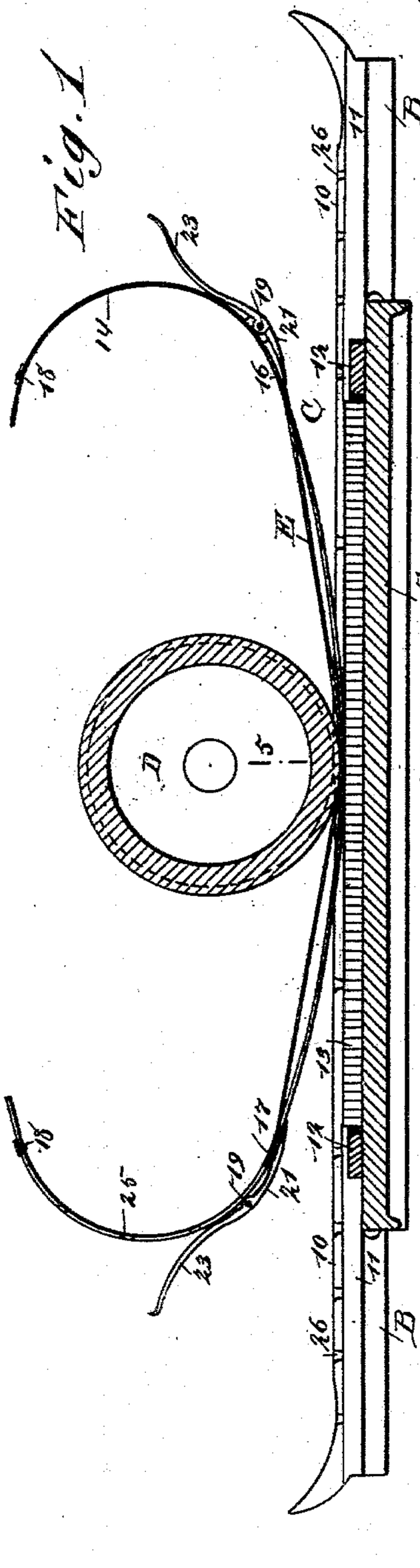
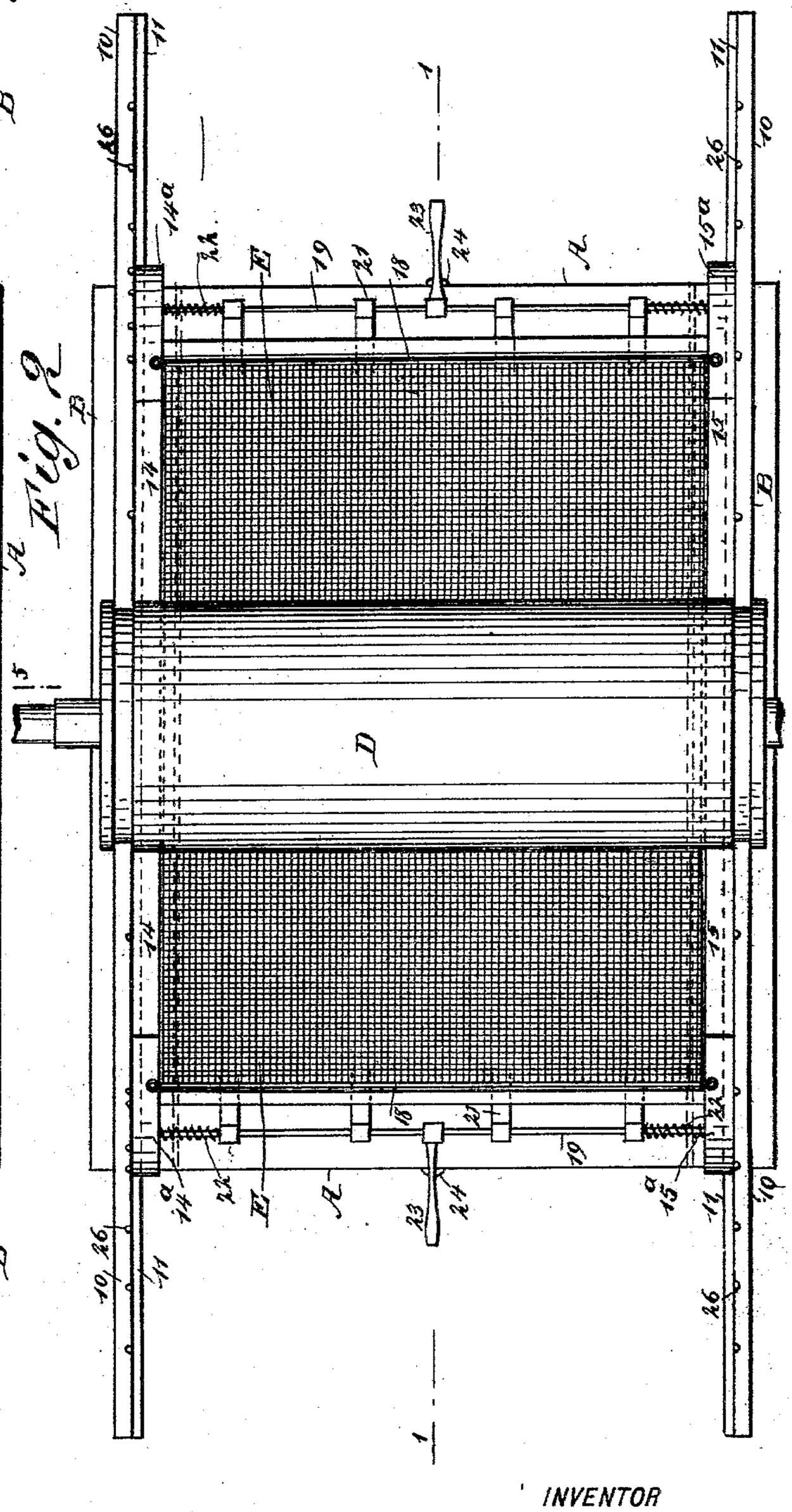


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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PRINTING PRESS.

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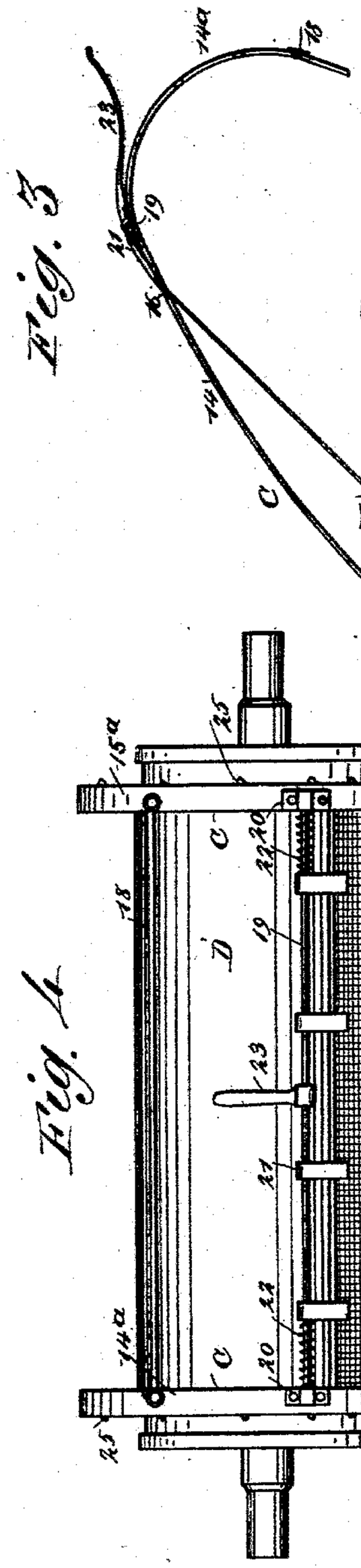

Fig. 3

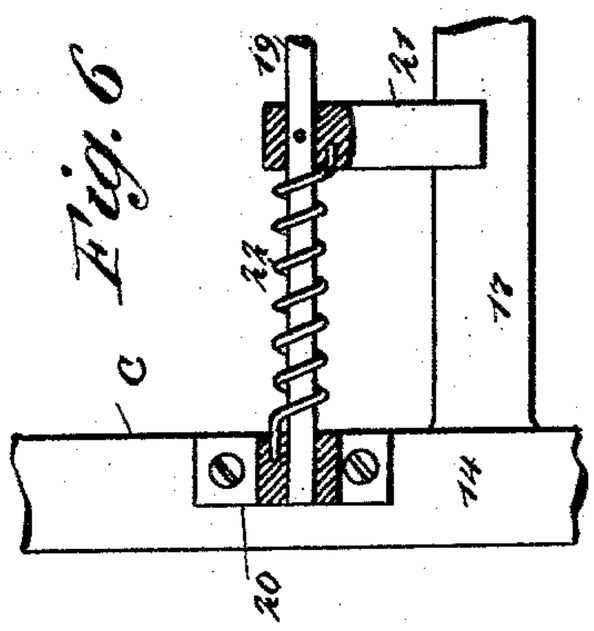

Fig. 6

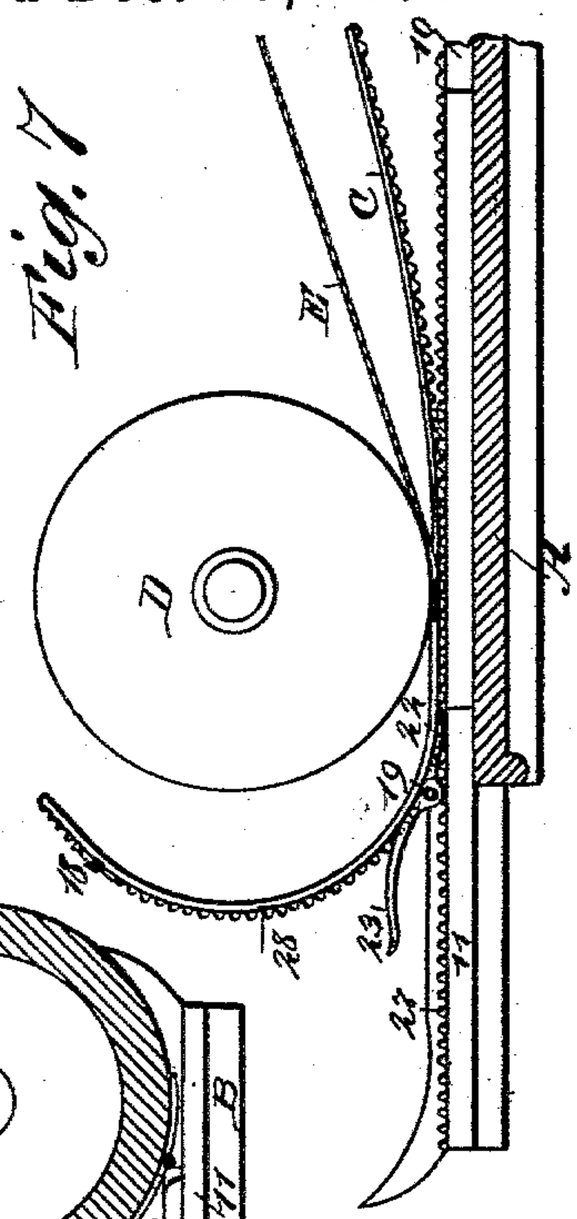

Fig. 7

Fig. 4

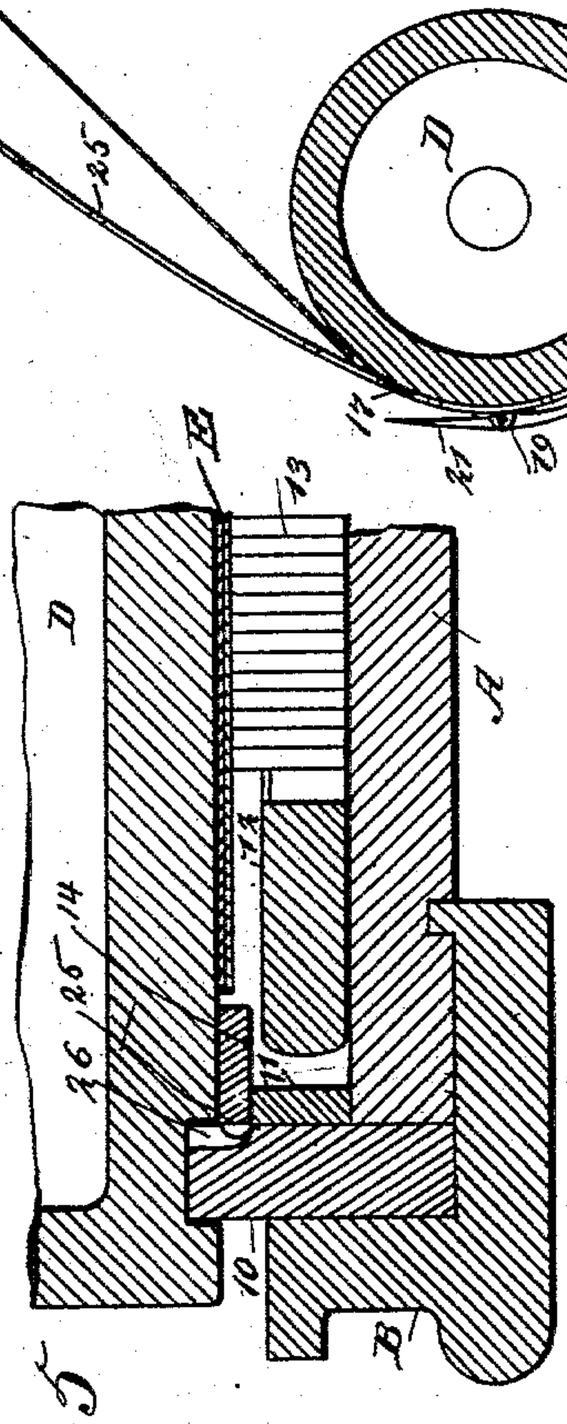

Fig. 5

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HYNEK BREUER, OF NEW PRAGUE, MINNESOTA.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 511,113, dated December 19, 1893.

Application filed February 28, 1893. Serial No. 464,005. (No model.)

To all whom it may concern:

Be it known that I, HYNEK BREUER, of New Prague, in the county of Scott and State of Minnesota, have invented a new and useful Improvement in Printing-Presses, of which the following is a full, clear, and exact description.

My invention relates to an improvement in printing presses, especially to hand presses of the cylinder type, and it has for its object to provide a press with a rocking tympan so constructed that it will operate automatically across the bed of the press as the cylinder is rolled over the latter.

A further object of the invention is to construct the tympan in a simple, durable and economic manner and also whereby as the impression cylinder is manipulated the material upon which the printing is to be produced will contact with the type form only at that point at which the impression is to be taken, the tympan acting automatically to carry the material upon which the impression is made away from the face of the type immediately after receiving an impression.

It is a further object of the invention to construct the tympan in such manner that one side of it will be automatically released the moment that the impression cylinder has passed to the end of the bed.

Another object of the invention is to so construct the tympan that it will be prevented from moving side-wise, being compelled to have end motion only, and whereby the tympan when acting in conjunction with the impression cylinder will produce a clear, sharp and fine print for newspapers, posters, fine book work and illustrations, effectually preventing smudging of the printed material, and whereby at the same time the work will be rapidly performed, the cylinder only being manipulated.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a section taken vertically and centrally through the bed, tympan and impression cylinder of a press, the said section being taken essentially on the line 1—1 of Fig. 2, the impression cylinder being shown as about mid-way of the press bed. Fig. 2 is a plan view of the improved press. Fig. 3 is a vertical section taken through the bed at one end and through the cylinder, illustrating the cylinder at the end of the press and the tympan in position to commence printing. Fig. 4 is an end view of the press. Fig. 5 is an enlarged partial transverse section through the bed, the cylinder and a portion of the tympan of the press, illustrating their connection. Fig. 6 is a detail view, illustrating the manner in which the grippers of the tympan are spring-controlled; and Fig. 7 is a view similar to Fig. 3, illustrating however, the opposite end of the press and showing the impression cylinder as near the end, and the position of the tympan at that time; the said Fig. 7 also illustrates a slight modification in the construction of the tympan.

In carrying out the invention the bed A of the press is supported preferably by angular side or bracket rails B, which rails in their turn are supported by appropriate legs or standards. The bracket rails B, extend beyond both ends of the bed A, and upon each member of each bracket rail a run-way 10, is located, the upper edge of which extends above the upper edge of the horizontal members of the bracket rails, as shown best in Figs. 4 and 5, and the bed is usually made to abut at its side edges against the run-ways 10. Rails 11, are located upon the bed at its sides, the said rails engaging with the inner surfaces of the run-ways, but the tops of the rails are some distance below the tops of the run-ways, as is likewise best shown in Fig. 5; and the rails 11 and run-ways 10, may be made integral or connected in any suitable or approved manner. The rails are adapted as tracks for the tympan C to be hereinafter described, and the run-ways are adapted as tracks for the impression cylinder D, which may be rotated or rolled over the bed in any suitable or approved manner.

I have illustrated as placed upon the bed chases 12, and have shown type forms 13

locked therein, and it will be observed by reference to Fig. 5 that the tympan rails 11 are slightly higher than the chases 12.

The main feature of this invention relates to the construction of the tympan C, and the body portion of the said tympan comprises two side bars 14 and 15, having an arched body, the body being concaved upon its upper face and convexed upon its lower face; and the said body is provided with curved extremities 14^a and 15^a, the said extremities being curved in direction of the center of the body, as shown in Figs. 1 and 3. The side bars 14 and 15 of the tympan are connected near their curved extremities by cross bars 16 and 17; and the curved portions of the tympan are connected by brace rods 18, in order that the said curved portions shall be held in proper shape; and near the bottom portion of the curved sections of the tympan at each end, a shaft 19, is journaled in suitable bearings 20, attached to the said side pieces, as shown in Fig. 4; and the bearings or boxes are located near the inner edges of the said side pieces in order that they shall not interfere with the rocking motion or travel of the tympan upon the rails 11. The cross bars 16 and 17 are slightly below the shafts 19, and the said shafts are provided with a series of grippers 21, which grippers are held normally in engagement with the cross bars 16 and 17 through the medium of springs 22, located at the ends of the shafts and each shaft is provided, preferably at its center, with an attached handle or lever 23, and these handles or levers are adapted to engage with projections or knobs 24, located at the ends of the bed preferably at the central portion thereof.

A felt or rubber blanket E upon which the paper is laid, is carried by the tympan, the sides of the blanket being free and working independently of the tympan. The ends of the blanket are secured in any suitable or approved manner to the cross bars 16 and 17 of the tympan frame, and when the tympan is in position to commence printing, as shown in Fig. 3, the blanket stands rearward or outward from the body of the tympan; but during the process of printing the impression cylinder presses the blanket and the paper supported by it downward against the type form. The paper is held at its ends by the upper and lower, or the two end sets of grippers 21, the said grippers engaging with the paper and clamping it between themselves and the cross bars 16 and 17.

In order that the tympan shall have guided movement upon the bed, that is, in a sidewise direction, and in order to insure its rocking in the same path at all times, projections or studs 25, are preferably formed upon the outer side edges of the side pieces of the tympan, and these projections or studs are adapted to enter recesses 26, formed in the inner upper side faces of the run-ways 10; but if in practice it is found desirable a rack surface 27, may be formed upon the upper surfaces of the runways 10 and the rails 11, to be engaged by teeth 28, formed upon the under face of the side pieces of the tympan frame, as illustrated in Fig. 7.

In Fig. 6 I have illustrated the manner in which the springs 22 exert power upon the grippers 21; and in said figure it will be observed that the springs at their outer ends are secured to the boxes 20, while their inner ends are secured to the end grippers, all of the grippers being rigidly attached to the shafts 19. Thus, in the process of printing, when the tympan is in the position shown for example in Fig. 3, that is, when the impression cylinder is at one end of the base frame of the press, the lower lever 23, attached to the lower gripper shaft 19, will have engaged with a stud 24, and the grippers at the lower portion of the tympan will be opened, admitting of the withdrawal of the paper therefrom, or the introduction of a sheet of paper therein, and after the paper has been secured, or has been located between the lower grippers and the lower cross bar 17, the lever 23 of the upper set of grippers is manipulated to raise said grippers from connection with the upper cross bar 16, and the paper is placed upon that bar and is engaged by the upper set of grippers when their lever is released from pressure. As the impression cylinder is rolled in direction of the opposite end of the frame the lower cross bars will close upon the paper, and the body of the tympan will be carried downward to a rocking engagement with the rails 11; and as the cylinder passes in direction of the opposite end of the tympan and likewise the opposite end of the press, the surface of the paper to be printed is forced downward upon the type form, while the printed portion of the paper will be raised from the form, thus effectually preventing any smudging or marring of the material to be treated. As the impression cylinder approaches the opposite end of the tympan the surface over which the roller is passing is elevated clear of the type form, and when the cylinder engages with the opposite curved surface of the tympan the tympan will be elevated upward and rearward in an opposite direction to that shown in Fig. 3, and in like manner.

The invention is exceedingly simple, durable and economic, and by means of a rocking tympan fine work may be obtained and likewise a saving of time, because the tympan need not be touched by hand but is operated simply and automatically by revolving the cylinder, whereupon it is given a rocking motion. Thus the tympan rises and falls automatically. The rocking tympan can be used on all printing presses where the straight disk is employed, and as heretofore stated it makes a radical improvement in the printing.

It will be observed that when the blanket is fastened to the rocking tympan as has been described, that is, with its edges free, the paper touches the type in such place only where pressure is brought to bear upon it by the

printing cylinder. It is also evident that by rotating the cylinder on the rocking tympan it will impart to the tympan a rocking motion at that point where the blanket together with the paper is pressed down at the front of the cylinder, and at the same time the tympan is raised at the rear of the cylinder and the printed portion of the sheet is carried out of engagement with the type form.

When the cylinder has traveled from one end of the press to the other, what was formerly the lower portion of the tympan will become the upper portion; and the lever 23 of the lowermost set of grippers will strike the projection 24 upon the bed, and the lower set of grippers will be thereby automatically opened, and the printed sheet may be removed by pressing downward upon the lever of the upper set of grippers; and after a new sheet of paper has been placed in gripping engagement with the tympan, the cylinder is rolled back to the opposite end of the bed of the press and a second impression is taken. This operation is repeated until as many sheets have been printed as may be found desirable.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a printing press a support and a rocking tympan adapted to have a rocking motion on said support, and to successively come in contact with adjacent portions of the same, substantially as shown and described.

2. In a printing press a type bed, a rocking tympan, and an impression roller traveling over the tympan and imparting movement thereto, as and for the purpose set forth.

3. In a printing press, the combination, with a support and a type bed, of a tympan comprising an arched body and upwardly and inwardly curved ends, and an impression cylinder adapted to be rolled over the tympan, whereby the latter is given a rocking movement upon its support, as and for the purpose specified.

4. In a printing press, the combination, with a support and a type bed, of a tympan of essentially cradle shape and adapted to have rocking movement upon the support, and an impression cylinder independent of the tympan and held to roll over and upon the said tympan, and gripping devices carried by the tympan, as and for the purpose specified.

5. In a printing press, a cradle-like tympan adapted for rocking movement over the bed of the press, a blanket secured at its ends to the tympan and free at its edges, and grippers located at the ends of the tympan, substantially as and for the purpose set forth.

6. In a press, the combination, with a support, a type bed, a tympan comprising an arched body and inwardly curved extremities, and a blanket secured to the body near its extremities at its ends, of an impression cylinder having rolling motion over and upon the tympan, imparting rocking motion to the latter, grippers carried by the tympan, and means, substantially as shown and described for manipulating the grippers, as and for the purpose set forth.

7. In a printing press, the combination, with a type bed, a support, of a rocking tympan having meshing engagement with its support, and an impression cylinder through the medium of which the tympan is given motion, as and for the purpose specified.

HYNEK BREUER.

Witnesses:
JOHN PROSHEK,
FRANK COVERT.