

(No Model.)

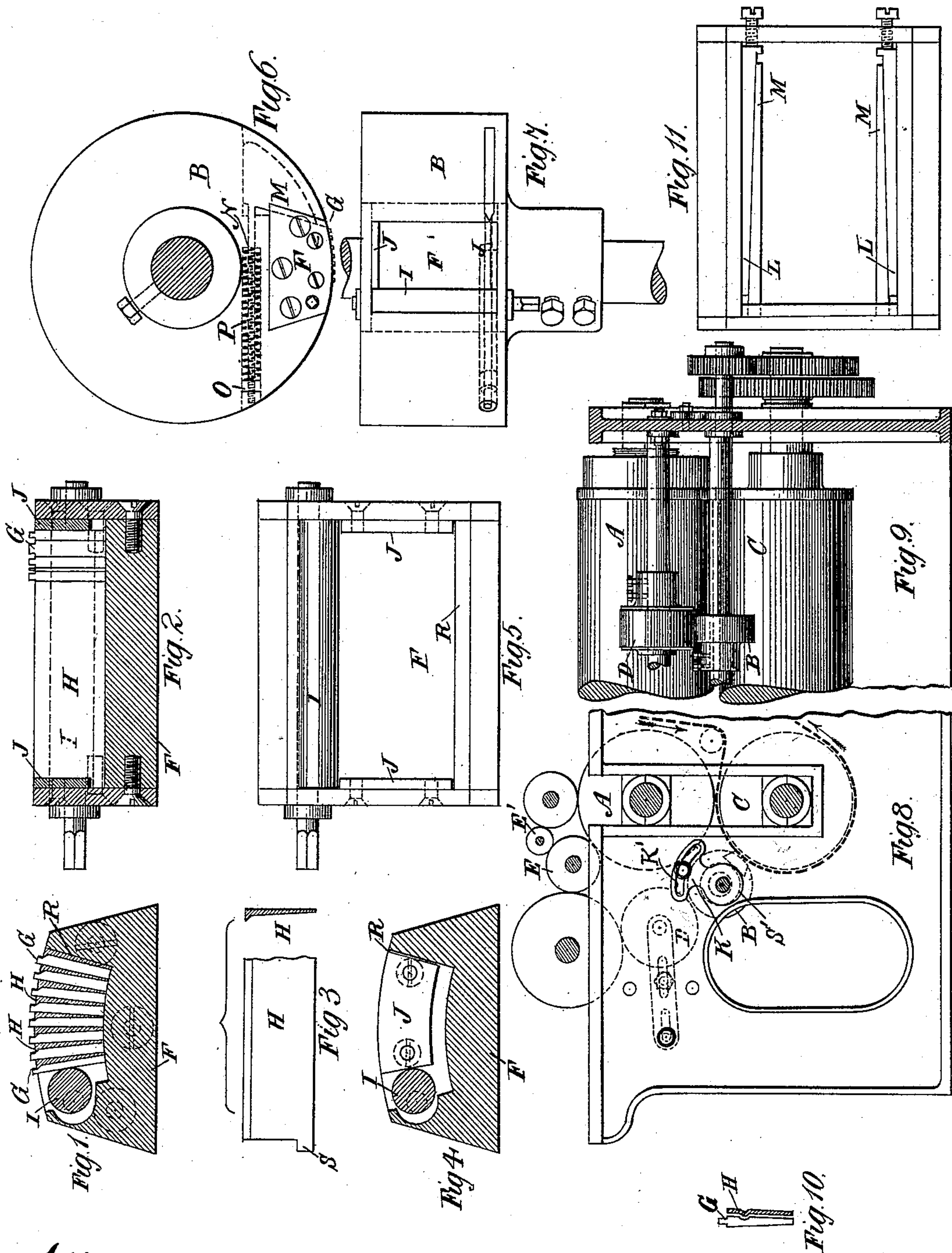
2 Sheets—Sheet 1.

J. H. BUXTON, D. BRAITHWAITE & M. SMITH.

PRINTING MACHINERY.

No. 405,009.

Patented June 11, 1889.



Attest.  
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By P. T. Dodge, Atty.

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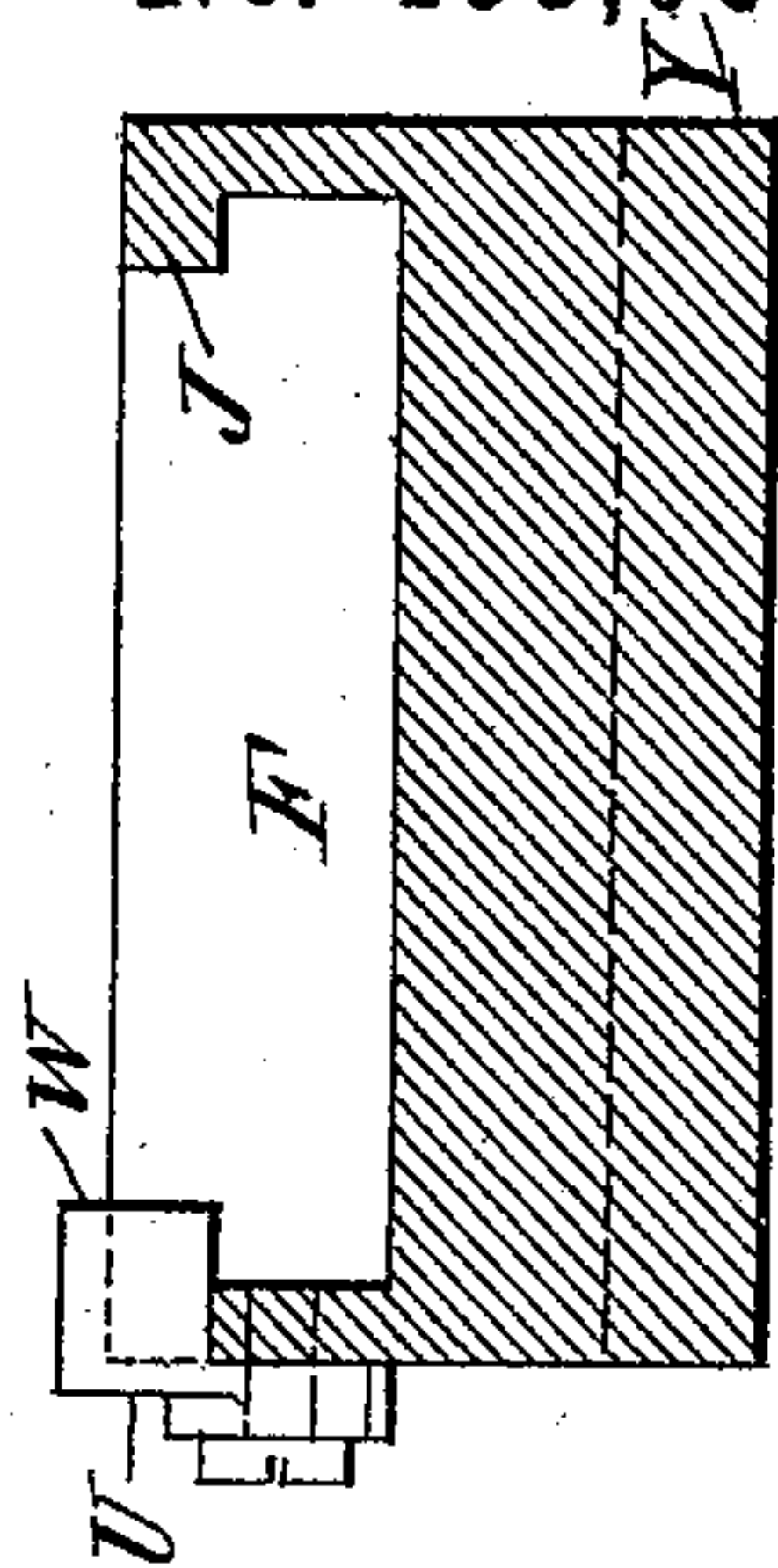


Fig. 14.

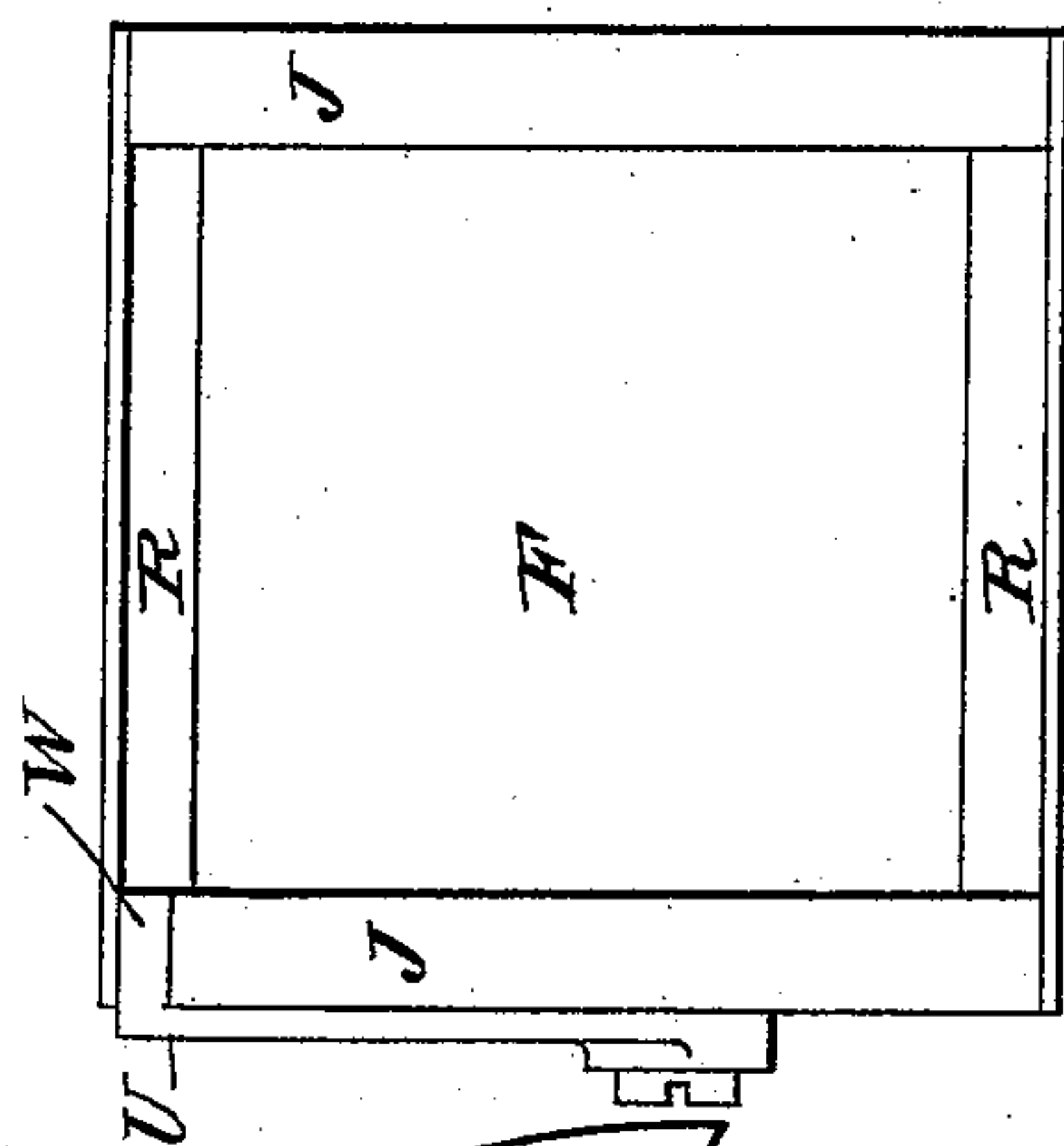


Fig. 15.

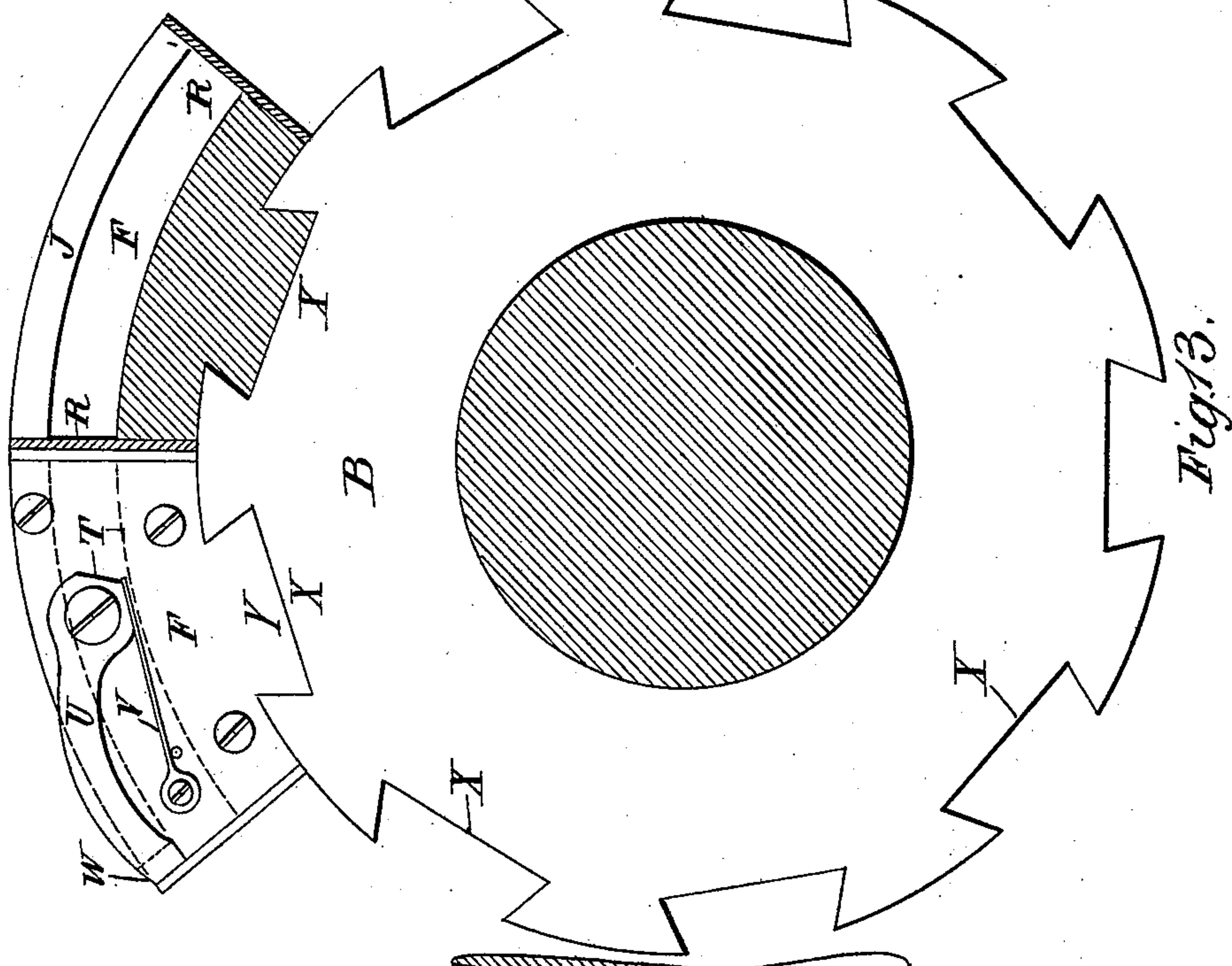


Fig. 13.

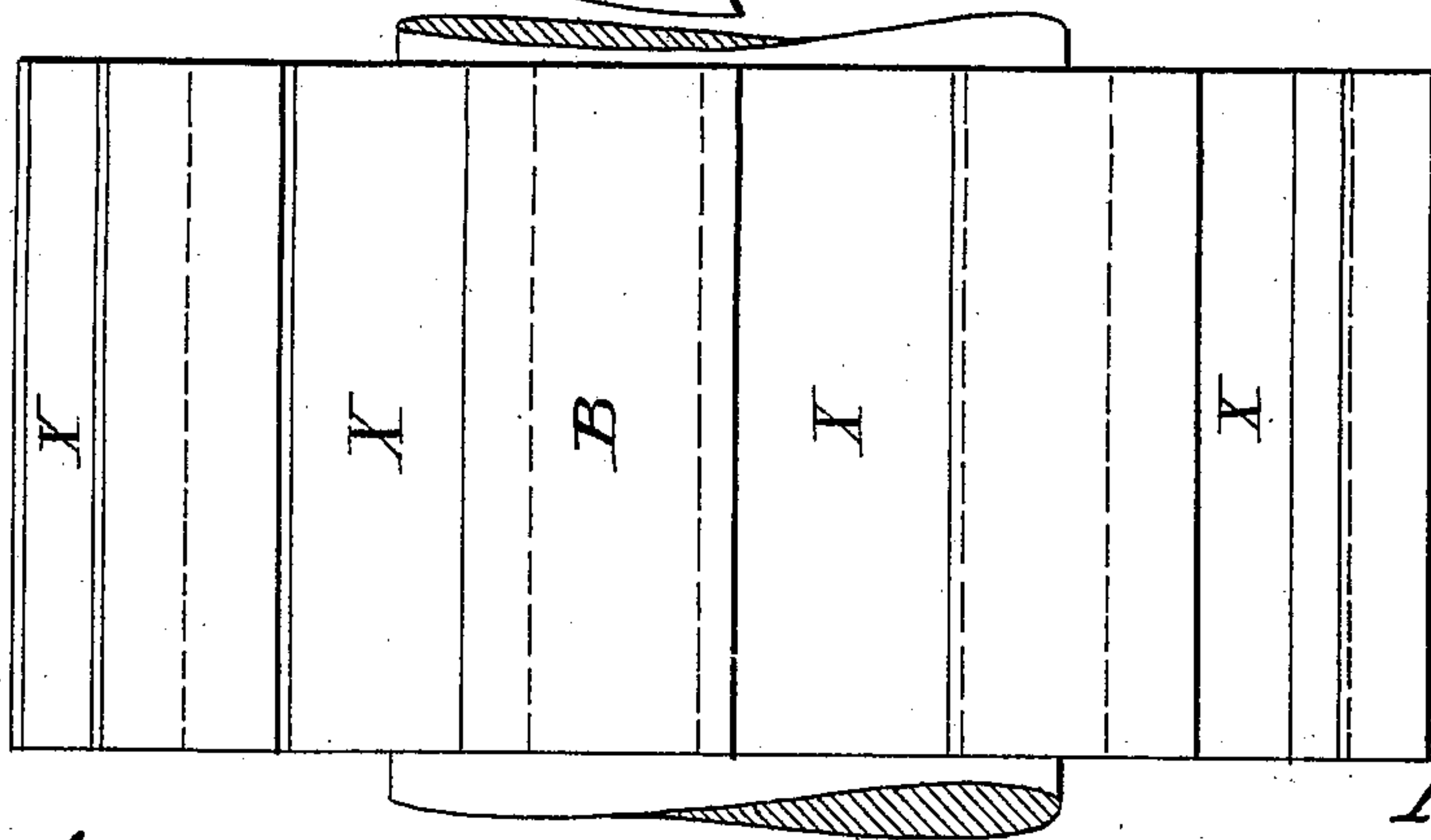


Fig. 12.

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# UNITED STATES PATENT OFFICE.

JOHN H. BUXTON, DAVIES BRAITHWAITE, AND MARK SMITH, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

## PRINTING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 405,009, dated June 11, 1889.

Application filed May 11, 1888. Serial No. 273,603. (No model.) Patented in England April 20, 1886, No. 5,470, and April 23, 1888, No. 5,989.

*To all whom it may concern:*

Be it known that we, JOHN HENRY BUXTON, DAVIES BRAITHWAITE, and MARK SMITH, citizens of Great Britain, residing at Manchester, in the county of Lancaster and Kingdom of Great Britain, have invented certain new and useful Improvements in Printing Machinery, (patented in Great Britain on the 20th day of April, 1886, No. 5,470, and April 23, 1888, No. 5,989;) and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to printing-machines in which the impression is made by means of curved printing-surfaces mounted upon a rotary cylinder. In such machines "late news" is sometimes printed by removing a portion of the stereotyped plate and substituting for the removed portion type or a stereo representing the late matter; but this is an inconvenient process and occupies a considerable amount of valuable time. To avoid these defects the type has been mounted upon or within an auxiliary cylinder and printed upon the margin of the newspaper, or upon a blank space left or provided for the purpose; but at the date of our invention no practically-workable arrangement of this kind has been in use.

The object of our invention is to enable late news to be printed by the aid and means of type carried upon an auxiliary cylinder.

The accompanying drawings, with the aid of the following description, will enable our invention to be carried into practical effect.

Similar parts in each of the figures are indicated by similar letters.

Type representing the late news of supplementary matter is secured in a box or boxes which is or are capable of being secured to an auxiliary printing-cylinder.

Figure 1 is a cross-section of a type-box showing the type secured in position. Fig. 2 is a longitudinal section of a type-box. Fig.

3 is a plan and cross-section of one end of one of the brass rules used in conjunction with the type. Both ends of each brass rule have the nib or projection S formed thereon. Fig. 4 is a cross-section of an empty type-box, showing one of the end plates and an eccentrically-mounted rod for securing the type in position. Fig. 5 is a plan of a type-box. Fig. 6 is an end view of the auxiliary cylinder, showing a type-box therein. Fig. 7 is a plan of Fig. 6. Fig. 8 is a partial side elevation of a printing-machine having our improvements applied thereto. Fig. 9 is a partial transverse section of Fig. 8. Fig. 10 represents a modified form of the type and brass rule. Fig. 11 is a plan of a type-box with a wedge arrangement for securing the type therein instead of the eccentric bar shown in Figs. 1, 2, 4, 5, and 7. Fig. 12 shows in elevation the auxiliary cylinder arranged for use with more than one type-box. Fig. 13 is a sectional side view of the cylinder, Fig. 12, with two type-boxes fitted therein. Fig. 14 is a cross-section, and Fig. 15 a plan, of the type-box shown in Fig. 13. Figs. 6, 7, 12, 13, 14, and 15 are drawn to an enlarged scale, and Figs. 8 and 9 to a reduced scale.

A is the main printing or type-bearing cylinder.

B is the auxiliary printing-cylinder.

C is the blanket-cylinder, commonly known as the "impression-cylinder."

D is the inking-roller for the auxiliary cylinder.

E E are inking-rollers for the main printing-cylinder.

F is the type-box. G is the type. H H are the brass rules.

I is an eccentrically-mounted rod in the type-box.

J J are end plates secured within the type-box.

K is an arc-plate carried on an eccentric bearing S' for putting the auxiliary cylinder into or out of action.

L L are wedges which may be used in substitution for the eccentric-rod I.

The auxiliary cylinder B has a dovetailed recess X, and the type-box F is formed or



constructed to fit into the recess by being slid endwise therein. If the type-box is made to fit the recess accurately it will retain its position; but if it is desired to obtain greater security, or if the box does not fit accurately, it may be fastened in the recess by means of any one of various known devices. Thus one end of the recess may be closed by a fixed plate, and after the box is inserted the other end may be closed by a pivoted plate and screw, or a flat spring may be inserted between the side of the box and the side of the recess, or the arrangement indicated by dotted lines in Fig. 6 may be employed. In this arrangement a cavity is formed in the cylinder and a transverse hole is drilled therein parallel with the bottom of the type-box. A bolt is fitted into the cavity and hole and has its head M shaped to fit or engage with a slot in the side of the type-box. The stem of the bolt passes through the hole below the type-box and has a spiral spring slipped over it, which is secured by the nut O. The hole through which the stem of the bolt passes is enlarged for a part of its length and the end of the enlarged part acts as an abutment for the spring, the tension of which keeps the bolt-head engaged with the type-box. When the type-box is inserted or removed, it is only necessary to push the stem end of the bolt to disengage the box.

The interior of the sides of the type-box on the side R is shaped so that they or it will be radial to the center of the auxiliary cylinder when the box is in position. The inside of the bottom of the type-box is shaped to the segment of a cylinder concentric with the auxiliary cylinder. The lower edges of the end plates J J each have a concentric curvature, and are parallel with the bottom of the type-box, and these plates have such a depth that a recess is left between their lower edges and the bottom of the box, as shown in Figs. 2 and 4.

A brass rule H is used between each line of type, and upon each end of the brass rule a nib or projection S is formed, which nibs fit into the recesses between the lower edges of the plates J J and the bottom of the type-box, so that as long as the brass rules are parallel with the sides of the box they cannot be lifted.

The brass rules or the type, or both of them, are shaped so that in cross-section their surfaces are bounded by radiating lines, such that when the type is fixed and the box is in the auxiliary cylinder these lines radiate from the center of the auxiliary cylinder.

In Fig. 1 the type has a parallel body, and in Fig. 3, is used.

In Fig. 10 is shown the section of a type having a tapered body.

The type and the brass rules may be secured together by means of a shoulder or chamber formed upon the upper edge of the body of the type and a corresponding return or beveled projection upon the upper edge of the

brass rule, as shown in Fig. 1. Alternatively, one or more grooves may be formed in the body of the type into which fit one or more corresponding longitudinal ridges formed upon the brass rule, as shown in Fig. 10.

The required matter having been set and the type having been inserted in the type-box, with one of the brass rules between each line of type, the eccentric-bar I is turned through part of a revolution so as to grip or clamp the type in the box, which is then inserted in the auxiliary cylinder.

If the inclined planes L L are employed in place of the eccentric-bar, they are preferably constructed and arranged as represented in Fig. 11.

L L are two inclined surfaces formed upon plates within or secured to the sides of the type-box. M M' are wedges having corresponding inclined planes.

When the wedges L L or M M', or either of them, are or is moved endwise, the space between M M' will be reduced or the type between them will be gripped. Parallelism of the faces of the edges is secured by the indicated arrangements of the inclined planes. Motion may be imparted to the wedges, or either of them, by means of a screw or screws passing through the end or ends of the box.

The shaft of the auxiliary cylinder is carried eccentrically in bearings, one of which is shown at S', Fig. 8. Each bearing has a plate secured to it in which there is a curved slot K', through which a bolt passes. By unloosening the nut the plate may be turned through a small angle in either direction, when, in consequence of the eccentricity of the bearing, the auxiliary cylinder may be put into or out of contact with the paper on the impression-cylinder.

As shown in the drawings, the auxiliary cylinder is geared to make two impressions for every revolution of the main printing-cylinder, and this is the arrangement we adopt when the printing-cylinder prints two copies of a newspaper at every revolution. The gearing and the diameter of the auxiliary cylinder will of course be arranged to meet any particular requirements.

In some cases it is desirable to print more late news than can be printed by the type in one single box. When this is likely to occur, we form upon the periphery of the auxiliary cylinder a number of dovetailed grooves X, as shown in Figs. 12 and 13, into which corresponding dovetails Y, formed upon the bottoms of the type-boxes, fit. In order to enable the type in the different type-boxes, when mounted upon the cylinder B, to be brought close together, so as to print with small intervening spaces, the sides R of the boxes are formed of thin sheet metal. The bodies of the boxes may be formed from a ring of metal turned to the desired shape and cut into sections. The projections J are arranged to provide the recesses below them for the reception of the nibs or tongues S upon the ends of



the brass rules. To enable the rules to be inserted in the box, a transverse slot is cut in one of the projections J, into which there fits a stop W, carried upon a lever U, pinned to the end of the box. To insert the brass rules, the lever W is moved into a vertical position and opens the slot in projection J, through which the tongues of the rules may be passed, after which the lever is restored to its original position, closing the slot and securing the rules. The spring V serves to hold the lever U in the open and closed positions by means of the flats T, formed on the hub of the lever.

By these improvements the surface of the type on the auxiliary cylinder is concentric with the cylinder, and the type is firmly held without liability or tendency to bulge or to be depressed.

It will be observed that under our invention the auxiliary cylinder is provided with grooves or recesses adapted to permit the ready introduction and removal of the boxes in which the type have been previously set and secured.

What we claim as our invention is—

1. In combination with an impression-cylinder and a main printing-cylinder co-operating permanently therewith, an auxiliary printing-cylinder to co-operate with said impression-cylinder provided with a removable type-holding box and movable bars, and adjusting devices for moving said auxiliary cylinder into or out of action at will, whereby the press is adapted for making a single impression or for making a main impression and a minor impression.

2. The printing-cylinder provided with the groove or recess and the removable type-confining box seated therein, in combination with the sliding detent or clamp mounted in said cylinder and having one end arranged to engage and confine the box and its other end exposed, whereby the detent may be moved endwise out of engagement with the box to permit the removal of the latter.

3. The printing-cylinder, in combination with a box removably seated therein, the type within the box, the tapered rules having shoulders to hold the type, and end projections to engage the box, and a pressure device within the box to confine the type and the rules.

4. In a type-holding box for a printing-cylinder, the end plates or shoulders J, one of said shoulders being recessed, in combination with the movable plate U, arranged to enter said recess, substantially as described.

5. The type-holding box for a printing-cylinder having the convex bottom and radial sides, the rows of type seated in said box, and the tapered rules extending longitudinally between the said rows parallel, or substantially so, with the radial sides of the box, and the lateral pressure device acting to confine said type and rules.

In testimony whereof we affix our signatures in presence of two witnesses.

J. H. BUXTON.  
D. BRAITHWAITE.  
M. SMITH.

Witnesses:

JOHN BOOKER,  
WM. E. KEYS.