

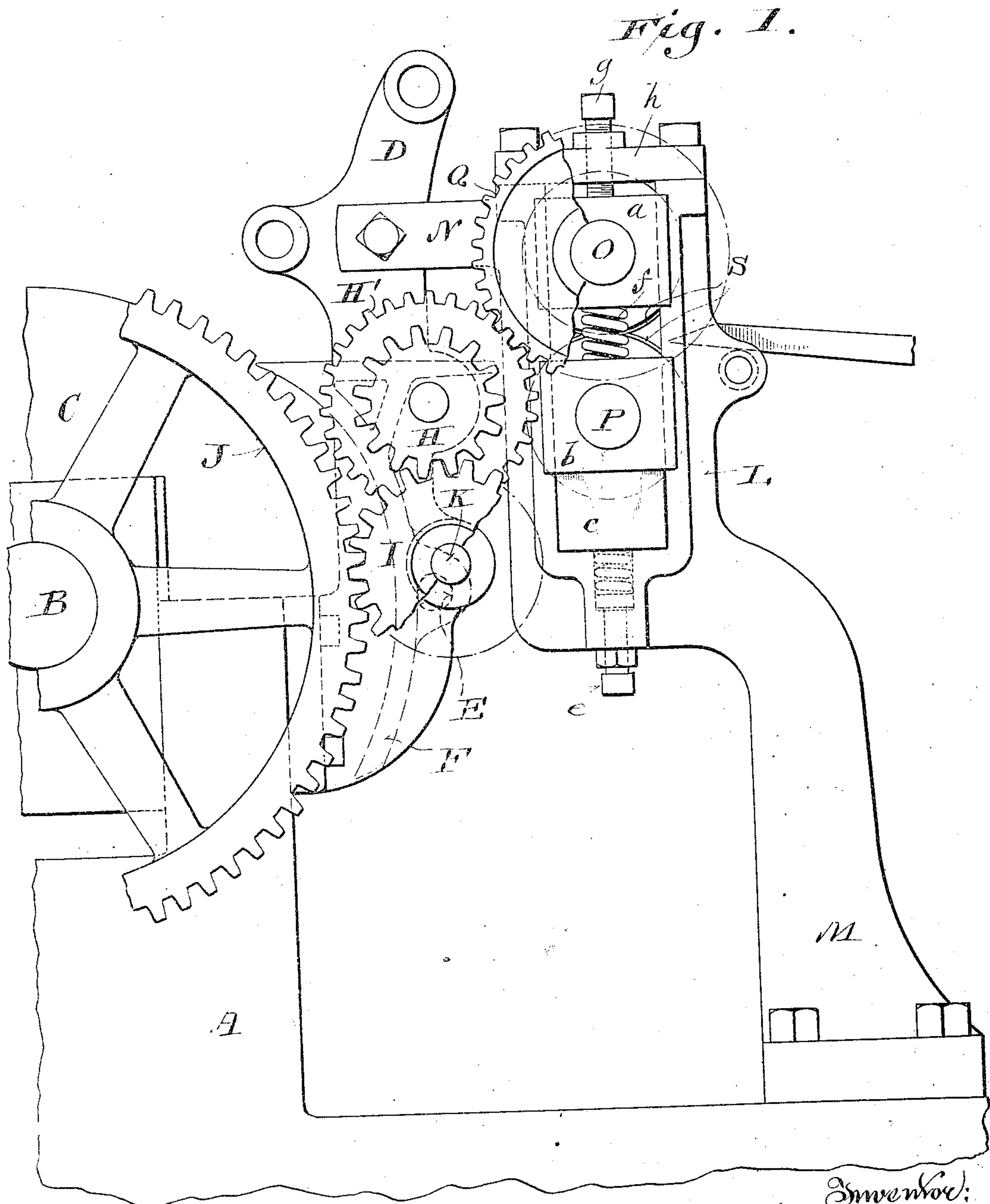
No. 855,339.

PATENTED MAY 28, 1907.

H. G. RAZALL.  
PERFORATING AND CREASING ATTACHMENT FOR PRINTING PRESSES.

APPLICATION FILED JULY 6, 1905.

4 SHEETS—SHEET 1.



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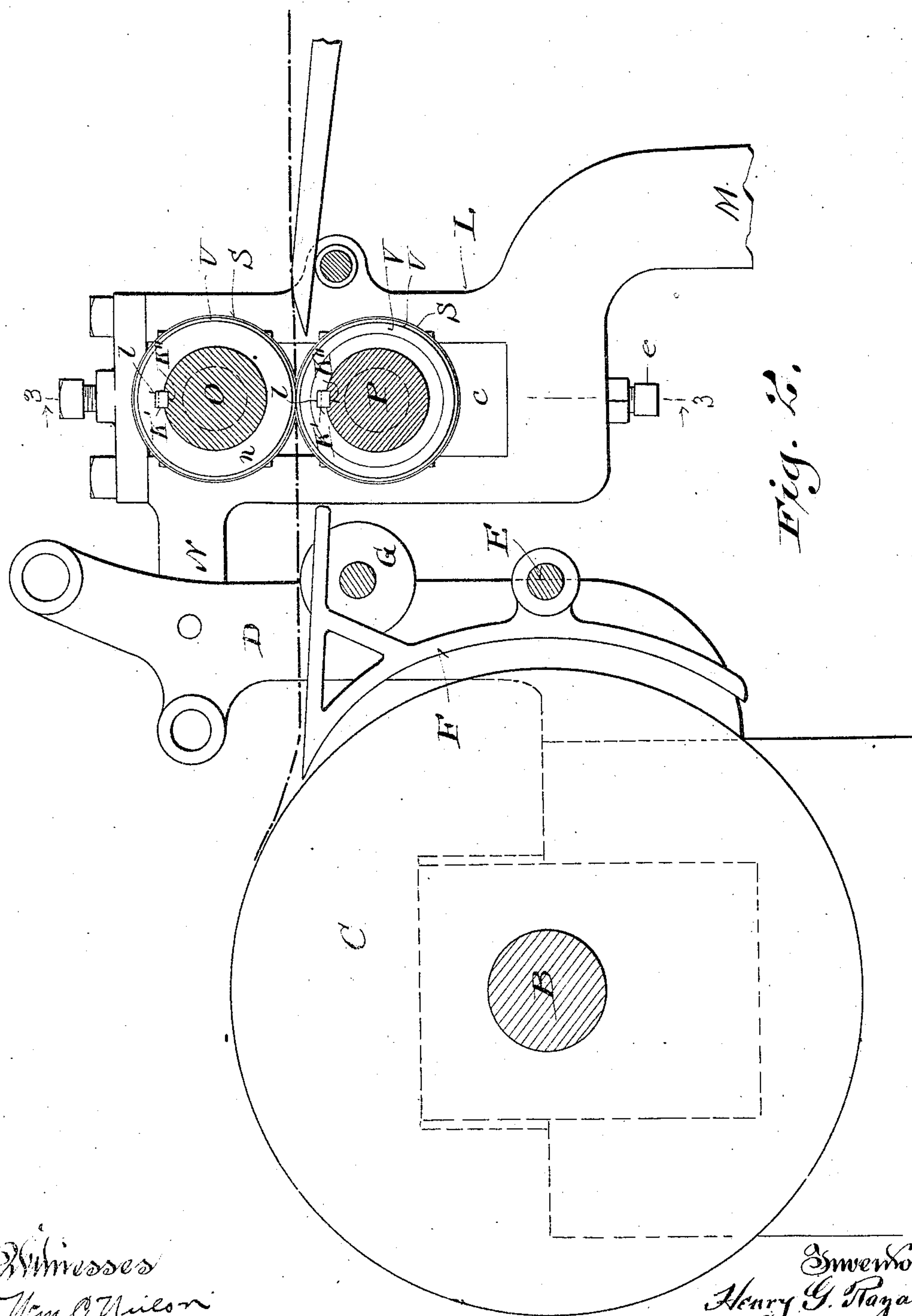
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4 SHEETS—SHEET 2.



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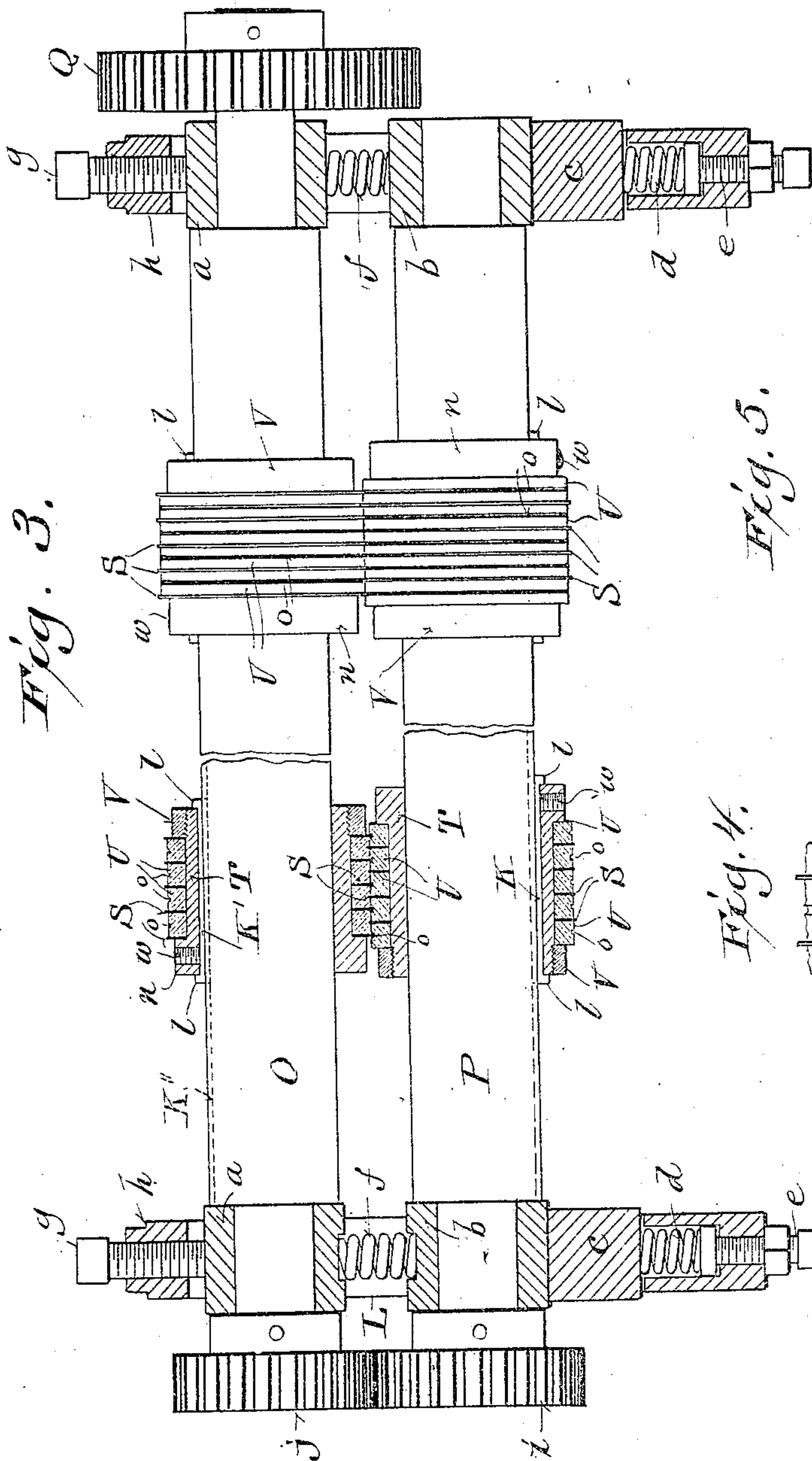


Fig. 3.

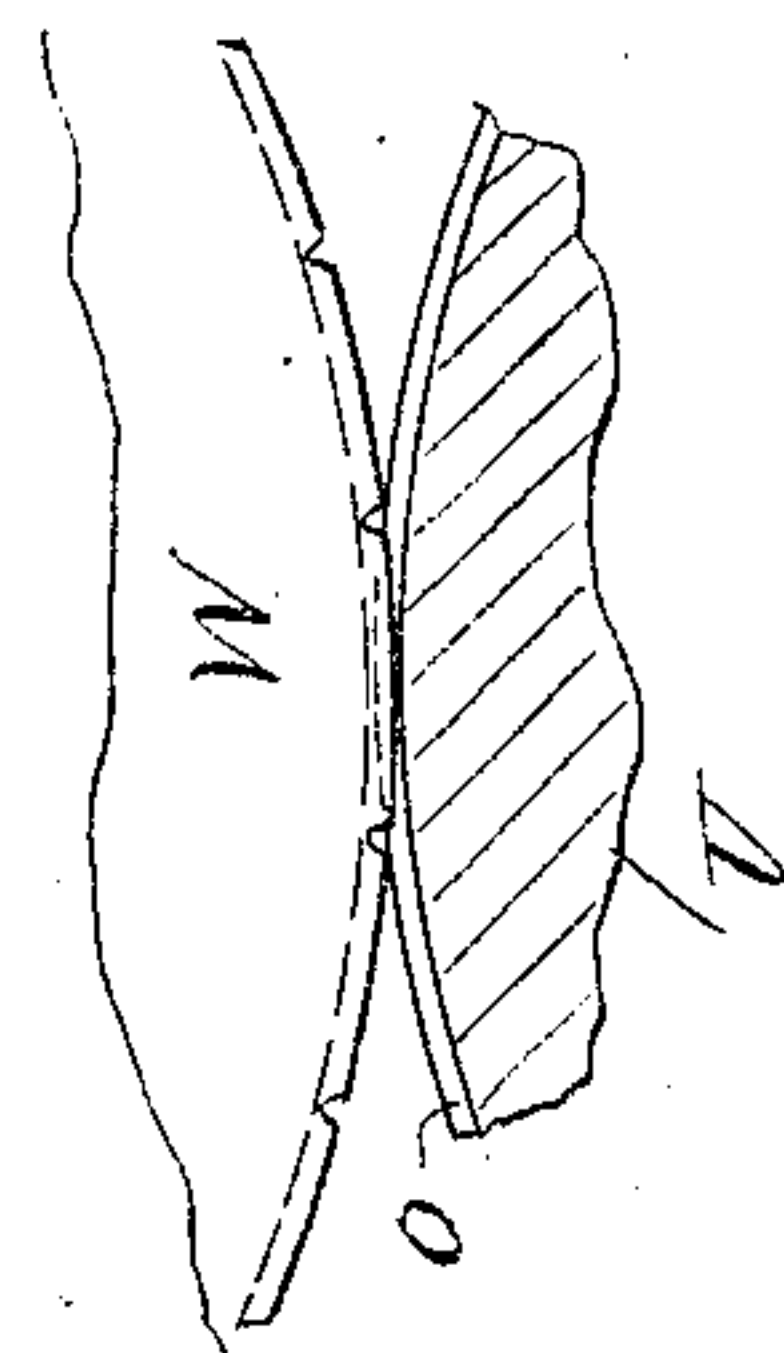


Fig. 5.

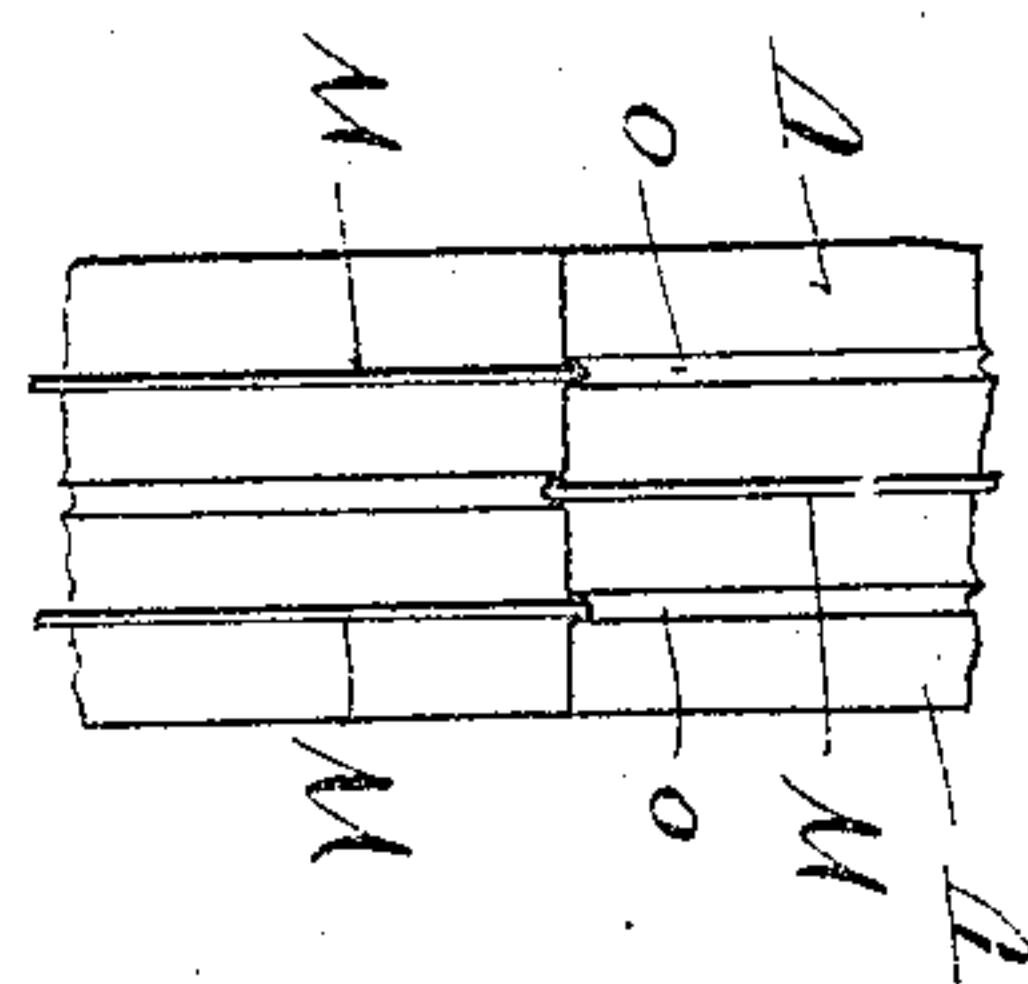
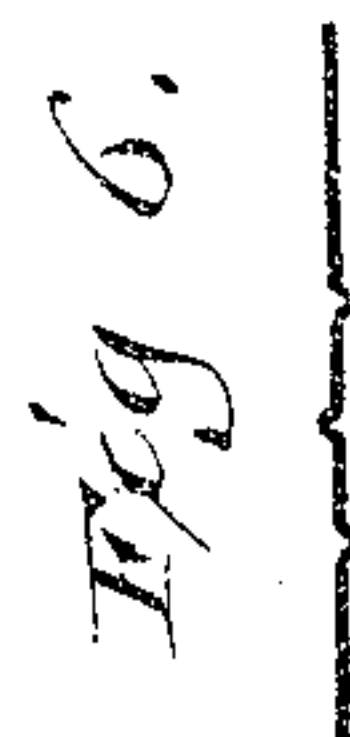


Fig. 4.



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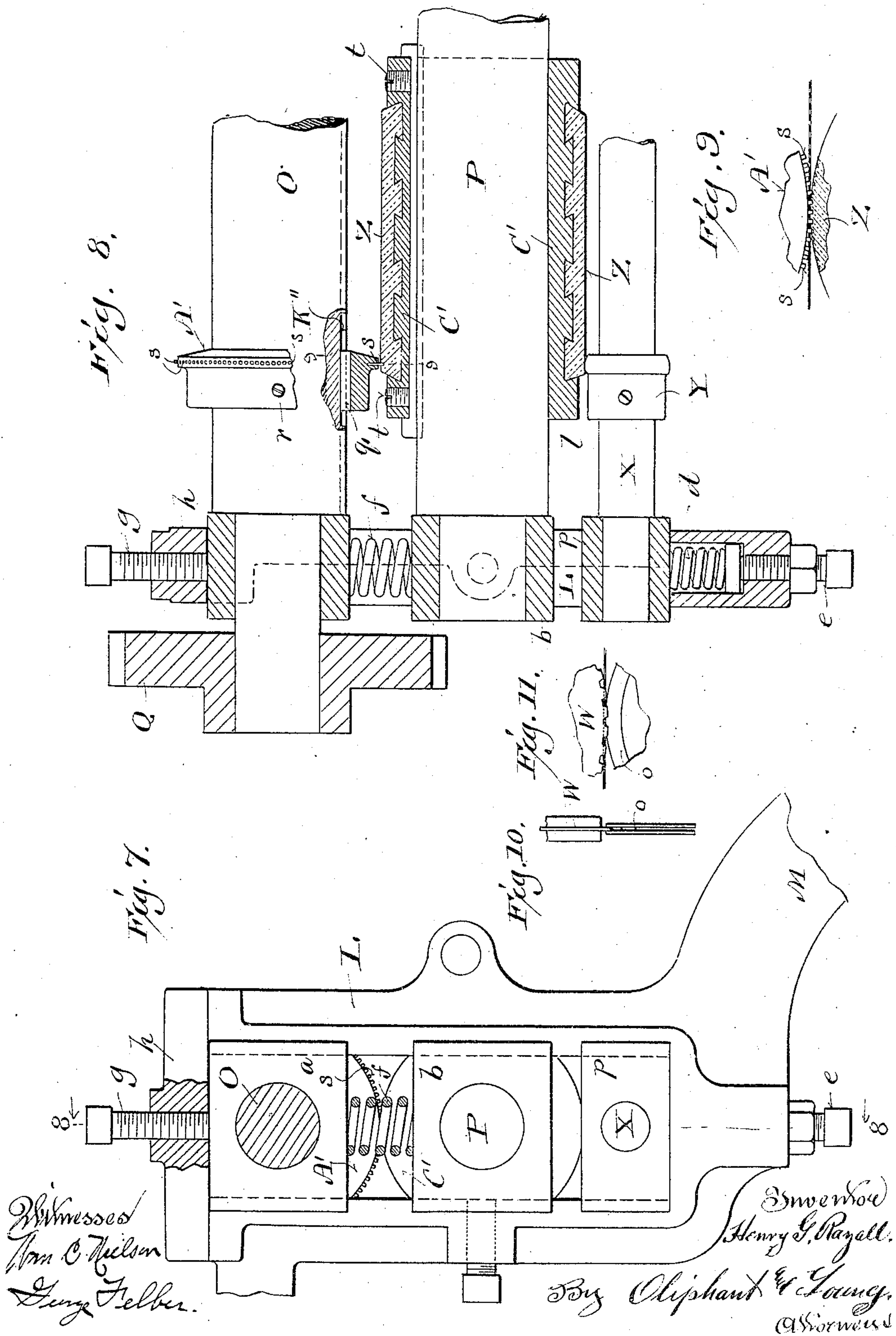
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4 SHEETS—SHEET 4.





# UNITED STATES PATENT OFFICE.

HENRY G. RAZALL, OF MILWAUKEE, WISCONSIN.

PERFORATING AND CREASING ATTACHMENT FOR PRINTING-PRESSES.

No. 855,339.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed July 6, 1905. Serial No. 268,404.

*To all whom it may concern:*

Be it known that I, HENRY G. RAZALL, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Perforating and Creasing Attachments for Printing-Presses; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention refers to perforating and creasing attachments for printing presses, its object being to provide a device of the character mentioned, which may be readily attached to a cylinder press without disarranging the mechanism thereof, another object being to so locate said attachment that it will catch the paper as it is delivered from the cylinder of the press, after having been printed, and draw said paper between a pair of perforating or creasing rolls from which it will be delivered by the usual fingers to the table, and thus the paper is printed and perforated or creased during the time ordinarily required to print and discharge said papers, said invention consisting in certain peculiarities of construction and combination of parts hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1, represents a fragment of a cylinder printing-press in elevation from the gear side of same and illustrates a perforator and creaser attachment in connection with the press; Fig. 2, a transverse section of the same; Fig. 3, a cross-section on line 3—3 of Fig. 2; Fig. 4, a detail view of fragments of the creasing-disks on an enlarged scale; Fig. 5, an elevation of the same; Fig. 6, a detail section of the paper after being creased; Fig. 7, a side elevation of a portion of the frame of the attachment, illustrating a perforating disk and parts coöperative therewith; Fig. 8, a transverse section of the same on line 8—8 of Fig. 7. Fig. 9, an enlarged detail of a portion of the perforating-disk and bed therefor, and Figs. 10 and 11 another form of perforating disk.

My invention, as embodied in the attachment illustrated, varies with relation to what is set forth in my Patent No. 796,450, granted August 8, 1905, for improvements in creasing or indenting devices, in that my present means, as previously stated, perforates or creases the paper just after it leaves the cylinder of a printing-press, and

consequently dispenses with the accurate timing of the peripheral speed of the perforating or creasing disks with relation to said cylinder.

Referring by letter to the drawings, A indicates a portion of a cylinder-press frame, B the cylinder shaft and C the printing-cylinder. Between the arms D of said frame is secured a rod E on which is mounted the usual strippers F, the arms also serving as bearings for the paper-discharge rolls G that are driven by a gear-wheel H through an intermediate gear-wheel I meshing with the driving-gear J of the printing-cylinder. The gear-wheel I is mounted upon a stud K projecting from the arm D of the frame, and the gear-wheel H is toothed so as to form another gear face H' of larger diameter through which motion is transmitted to the perforating or creasing attachment.

The brackets L for the support of the perforating or creasing mechanism are forked, and also provided with feet M for attachment to the frame A, and with braces N, at their upper ends which are bolted to the arms D of said frame. An upper shaft O and a lower shaft P, which carry the several perforating or creasing devices, have their bearings in adjustable boxes *a*, *b*, respectively fitted between the forks of the brackets L, and secured to the shaft O at one end is a gear-wheel Q which meshes with and is driven by the gear-face H' of gear-wheel H. The boxes *b* of the shaft P rest upon filler-blocks *c* interposed between said boxes and the base of the bracket L. Below the filler-blocks and resting in recesses in the base of bracket L, are springs *d* having tension-adjustment, by a set-bolt *e*. The shaft O is held in position by coil-springs *f* interposed between the boxes *a* of said shaft and the boxes *b*, in opposition to set-bolts *g* located in caps *h* secured to the top of forks of the bracket L. The shaft P is driven at the same speed as the shaft O, through gears *i*, *j*, respectively located upon the ends of the said shafts, as illustrated in Fig. 3.

As illustrated in Figs. 1, 2, and 3 the shaft O of the attachment is equipped with two gangs or sets of creasing disks S. Each gang is mounted upon a thimble T having longitudinal adjustment upon the shaft, and the thimble is held against independent rotation by a key K' fitting into recesses in the thimble and into a corresponding key-way K'' in said shaft. The key is confined within the



thimble by upturned ends *l* and when said thimble is adjusted to the desired position, longitudinally of its shaft, it is locked by a set-screw *m* which impinges against the key and draws the aforesaid thimble tight. The disks *S* are assembled by slipping the first one against a shoulder *n* of the thimble *T* and thereafter alternating each disk with a spacing-ring *U* (having an annular groove *o*) until the desired number are in place. They are then clamped by a spanner *V* which is threaded upon said thimble. The lower shaft *P* is similarly provided with corresponding sets of disks which break joints with the upper sets so that the disks of the lower shaft mesh with the grooves *o* of the upper sets of disks and vice versa. While I have described the thimble *T* and grooved spacing-rings *U* equipped with creasing-disks, it is obvious that for the latter I may substitute elongated disks *W*, having elongated perforating teeth shown in Figs. 4 and 5, as in practice it has been found that where an elongated perforation is desired, it can be obtained by combining the perforating-disk with the grooved ring, or the same result may be obtained by interposing the perforating-disk between shear-disks, as illustrated in Figs. 10 and 11.

As shown in Figs. 7, 8 and 9 the machine is arranged for perforating round holes, the filler block *c* being removed and a set of boxes *p* (one of which is shown) for an idle shaft *X* substituted, the springs *d* serving to force said shaft together with the smoothing roller *Y*, upward and thus causing the latter to impinge against a cylindrical bed *Z*, the object of which is described hereinafter. The perforating-wheel *A'* is provided with a feather *q* which rests in the key-way *K''* of shaft *O* upon which said wheel is mounted and secured longitudinally thereof by a set-screw *r*. The wheel *A'* carries a series of round perforating pins *s*, and in order to produce a clean cut round perforations with this wheel, the cylindrical bed *Z* of soft metal is secured to a shell *C'*, this bed being preferably molded to the shell and held thereon by annular dove-tailed shoulders intermediate of the ends thereof which are also dove-tailed at their inner edges. The shell *C'* is secured to the shaft *P* by set-screws *t* which impinge against keys fitted in the key-way of said shaft similarly to those previously described. The smoothing roller *V* is adjusted in line with the perforating wheel and as the latter revolves each tooth or pin embeds itself into the soft metal bed *Z*, which supports the paper while being perforated, and will thus produce a clean cut. The holes made in said metal bed are ironed out by the smoothing roller until the bed at this point has become worn. The bed may then be adjusted longitudinally of its shaft to bring a fresh surface

under the perforating wheel and so on until the entire bed is used, after which the shell may be removed and the metal bed recast thereon.

Having thus described my invention what I claim as new and desire to secure by Letters-Patent is:—

1. The combination with a cylindrical printing-press, of a detachable perforating or creasing machine consisting of a bracket secured to the frame of the press, a pair of shafts mounted in said bracket at the discharge side of the printing-cylinder, perforating or creasing disks secured to the said shafts, and a driving means connecting one of the shafts with the driver of said printing-cylinder.

2. The combination with a cylindrical printing press, of a detachable perforating or creasing machine consisting of a bracket secured to the frame of the press at the delivery end of same, a pair of perforating or creasing disks mounted on shafts, adjustable boxes for the shafts supported in said bracket, and a driving-gear mounted upon one of said shafts in mesh with the driving-gear of the paper-discharge roller of the press.

3. The combination with a cylindrical printing press, of a detachable perforating or creasing machine consisting of a bracket secured to the frame of the press at the delivery end of same, upper and lower shafts adjustably mounted in said bracket, meshed gears on the shafts at one end thereof, perforating or creasing disks adjustably secured to each of said shafts, a driving-gear secured to the upper shaft in mesh with the driving-gear of the paper-discharge roller of the press, and intermediate gears interposed between the last named gear and the printing-cylinder driving-gear.

4. In a perforating mechanism, a wheel provided with a series of radial pins, a pliable metallic cylindrical bed in the path of said pins, and a smoothing-roller in opposition to said bed.

5. In a perforating mechanism, a wheel having a series of radial pins, a drive shaft for the wheel, a soft metallic cylindrical bed in opposition to the pins, a shell for said bed and a shaft for the shell, means for adjusting said shell longitudinally of the shaft, and a smoothing-roller in opposition to the aforesaid bed.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

HENRY G. RAZALL.

Witnesses:

GEO. W. YOUNG,  
GEORGE FELBER.