

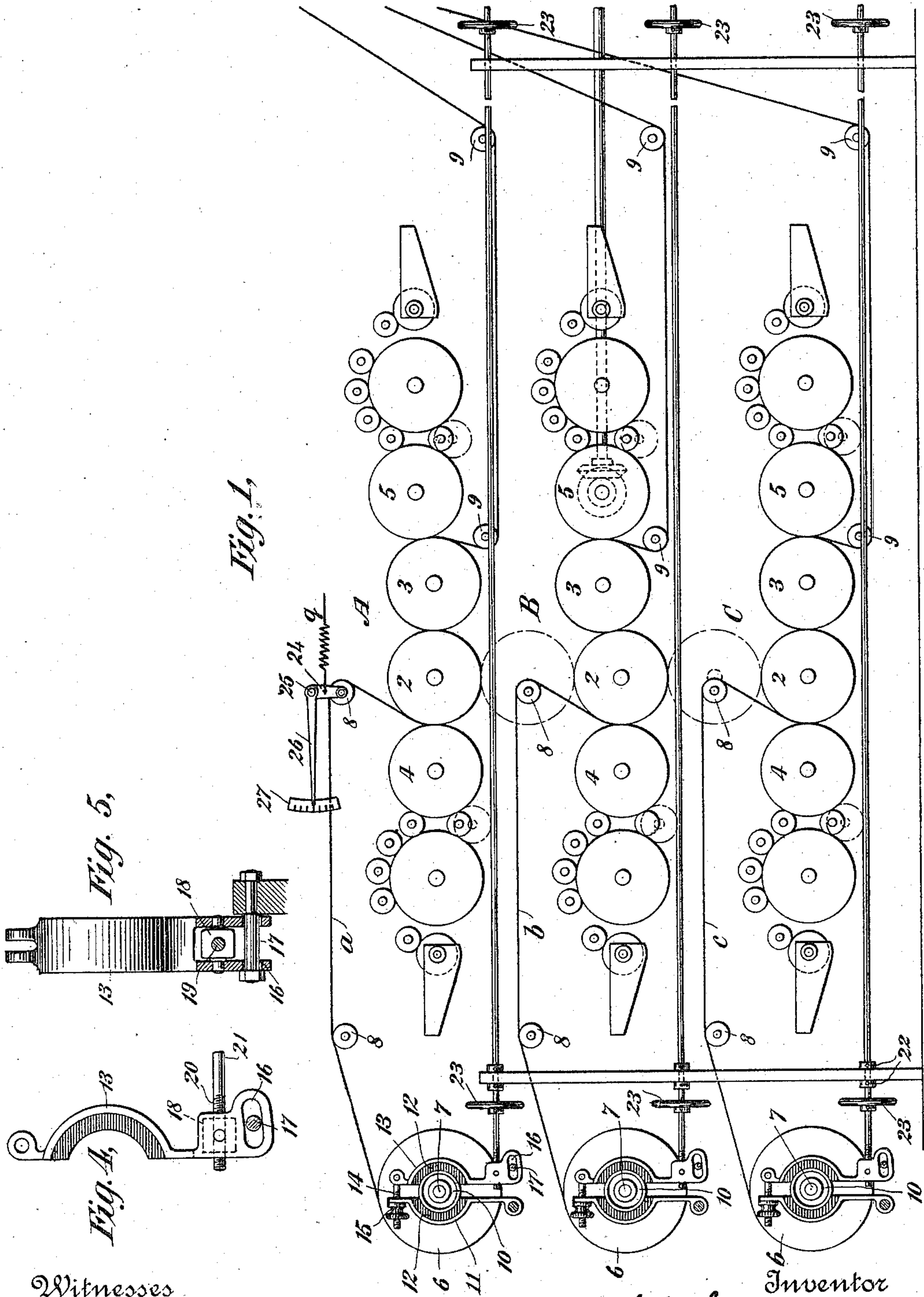
(No Model.)

2 Sheets—Sheet 1.

W. SCOTT.
PRINTING MACHINE.

No. 580,559.

Patented Apr. 13, 1897.



Witnesses
C. E. Ashley
14. W. Lloyd

Inventor
W. Scott,
By his Attorneys
Wilcox & Barker.

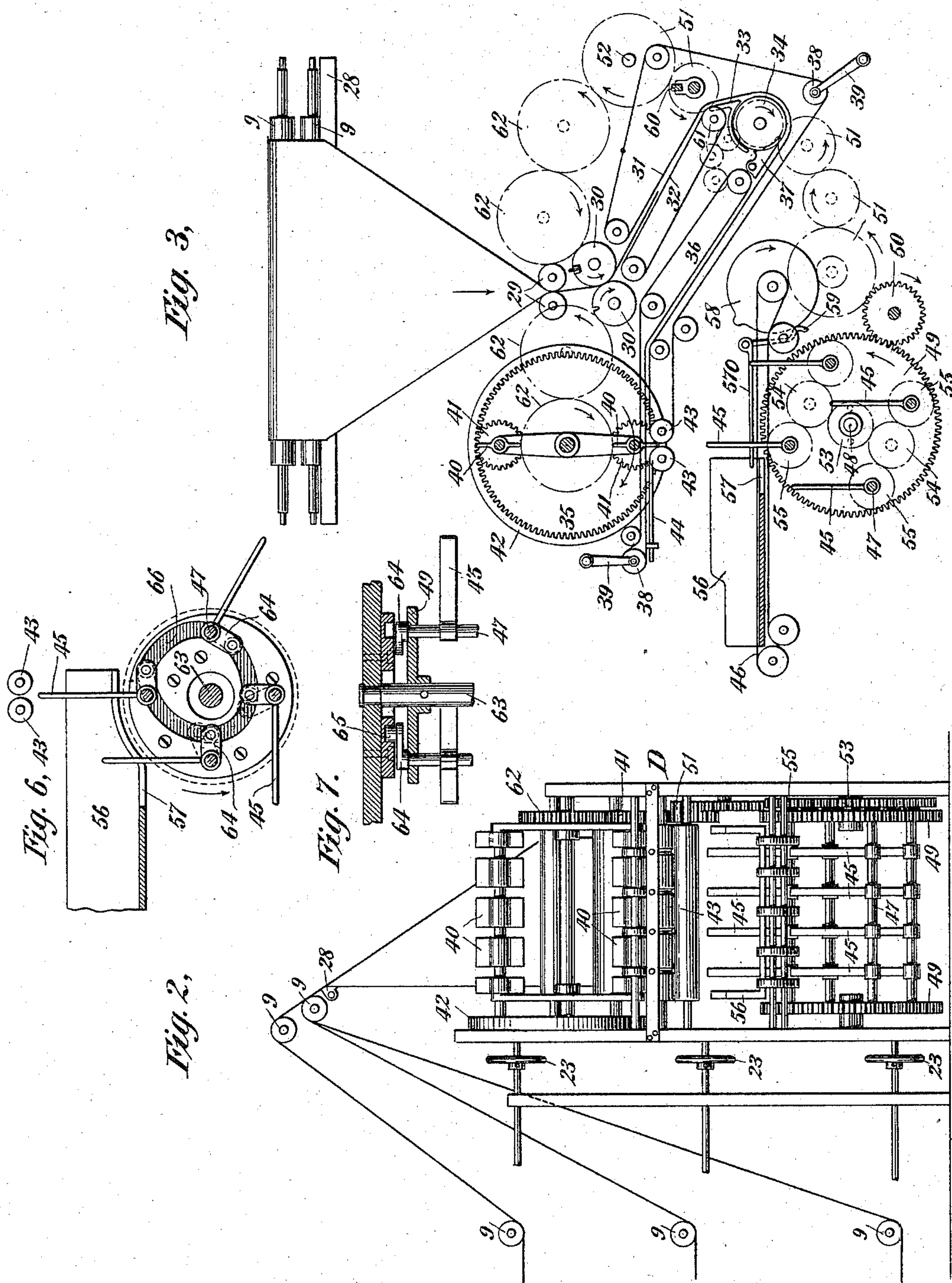
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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 580,559, dated April 13, 1897.

Application filed October 23, 1893. Serial No. 488,897. (No model.)

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Printing-Machines, of which the following is a specification.

This invention relates to web-printing machines, and has for its objects the regulation of the tensions of the webs from a point distant from the rolls from which the webs are drawn, as from the transversely-cutting mechanism, the improvement of the delivery apparatus, the counting of the copies delivered, and other objects, as will hereinafter more fully appear.

To these ends the invention consists of combinations of devices hereinafter described and more particularly pointed out in the claims concluding this specification.

The preferred form of the invention is illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a diagrammatic side elevation showing the cylinders of the printing-machines, the means for supplying webs thereto, and the devices for controlling the tensions of the webs, such devices extending near and being operated by a person at the cutting or delivery apparatus of the machine. Fig. 2 is a side elevation of a folding and delivery mechanism. Fig. 3 is a diagrammatic end view of the folder, showing one form of the packer and the means for operating it and also the counter for the copies delivered. Figs. 4 and 5 are respectively edge and side views of one member of the frictional web-tension regulator. Fig. 6 is a side view, and Fig. 7 is a sectional plan view, of a modification of the devices for operating the packer.

The printing mechanisms are or may be of any suitable or usual type and may be duplicates of each other. The printing-presses shown each consists of impression-cylinders 2 and 3, with which the plate or form cylinders 4 and 5 coact. Any suitable inking apparatus may be used in connection with the form or plate cylinders. The three mechanisms shown are placed one over another.

The machines A, B, and C are supplied with webs, as *a, b, and c*, from as many rolls 6, which are supported by the framework of the ma-

chine (not shown) through the shafts 7. The webs are led or guided to their respective printing-presses in any suitable way, as by rollers 8, and are guided away from the printing-presses to the folding mechanism, as by rollers 9. The shafts 7 may be and preferably are provided with pulleys 10, fast thereto, for coaction with a suitable friction device for regulating the web-tensions. The device shown consists of the pivoted arm 11, which is provided with a friction or wearing face 12, and the arm 13, which is provided with like material or face 12 and is also provided with the screw 14, pivoted thereto at one end. This screw 14 drops into or between the forks at the upper end of arm 11, and the distance of arm 13 from arm 11 is regulated by means of the screw-nut 15, which engages with the screw 14. The arm 13 is provided at its other end with the slot 16, and there is a pin 17 on the framework of the machine which enters said slot and acts as a guide for the arm 13.

The slot 16 is parallel with and preferably concentric to the pivotal connection of arm 13 and screw 14. The arm 13 is also provided with a slot at the same end as slot 16, which is at right angles to slot 16. In such slot or fork I pivot or swivel a block 18, which is provided with a screw-threaded perforation 19, with which the screw-threaded end 20 of the horizontal shaft 21 engages. This shaft 21 is suitably journaled in the framework of the machine and is held against longitudinal motion therein, as by collars 22, which are fast on the shaft, and extends along the machine to or near the folder D, and has upon it one or more levers 23, by which it is operated. These levers are or may be in the form of hand-wheels. By turning the lever 23, and so the shaft 21, in either direction the pressure of the friction-surfaces 12 upon the pulley 10 is varied, and the web-tension is also varied. By the use of the described means an attendant at the folder or cutting mechanism is enabled to bring the transverse margins of the webs into the proper register with the cutting-blades in an expeditious and certain manner.

It will be seen by reference to Fig. 1 that one of the rollers 8, as that over which the web *a* passes, is or may be supported by arms 24 of the rock-shaft 25, said shaft having fixed

to it the pointer 26, which passes over the face of a scale 27, fixed to the framework of the machine. This shaft 25 is turned in one direction by the pull of the web *a* and in the other direction by a suitable spring, as *q*. Any variation in the web-tension will be shown by the movements of the pointer 26 over the scale 27.

If desired, the corresponding rollers of the other presses may be similarly mounted and be provided with similar web-tension indicators. This web-operated web-tension indicator is fully described and claimed in my Letters Patent dated the 24th day of November, A. D. 1896, and bearing number 571,982.

In its general features the folder D (shown in the drawings) is of usual construction and operation. The associated webs are or may be folded longitudinally by the internal guide or former 28 and the external guides or rollers 29. The folded webs are severed or divided into sheets by the cutting-cylinders 30, which are or may be of usual construction. The sheets so formed are taken by the tapes or guides 31 32 and fixed guide 33 to the cylinder 34, which may collect them in the well-known manner, or the sheets may be run direct to the folder 35 by the tapes 31 36. When the cylinder 34 is used as a collecting-cylinder, the vibratory guides 37 are employed in the well-known manner to direct the sheets around the cylinder 34 and along the tapes 31 36. The tapes 31, 32, and 36 run upon suitable rollers or pulleys, as shown, and may have suitable tension-regulators, as the adjustable rollers 38, which are carried by the pivoted arms 39. The folder 35 is of a usual type, consisting of rotary blades 40, which are carried by shafts, which have gears 41 fast to them. These gears engage the fixed or stationary gear 42 on the framework of the machine. The blades 40 coact with the folding-rollers 43 in the well-known manner. That part of the sheet which runs beyond the rollers 43 is supported by guide-bars 44, which are suitably supported in the framework. The folded products drop downward from the folding-rollers 43 in front of the packers 45 onto the tapes 46, which carry them to the delivery. The packers 45 catch the sheets during their descent and move them toward the delivery, the packers remaining parallel to themselves, or nearly so, while in contact with the falling sheets or copies.

Each packer 45 is fast to its own shaft 47, which is journaled in the arms or disks which are sleeved upon the studs 48 in the framework. These disks, as 49, may be provided with gear-teeth on their periphery, which teeth engage the last gear, as 50, of the train of gearing 51, connecting with a side shaft 52. Each shaft 47 is provided with a gear-wheel 55, fast thereto, and one of the disks 49 is provided with a set of gears 54, one for and engaging with two of gears 55. These gears 54 all engage with the gear-wheel 53, which is fixed against motion on the framework.

The proportions of the gears 53, 54, and 55 relatively to each other are such that the packers 45 remain parallel to themselves, or upright in the case shown, at all times. The tapes 46 run the products into the receiving-trough 56, which is slotted at the end next the packers 45 to allow of the packers to pass freely. These slots are marked with the references 57.

For the purpose of counting the copies as they are delivered I provide the rocking fingers 570, which are normally parallel to the tapes 46 and close thereto. When the time comes for "counting," these fingers are rocked or lifted and stop the descent of a copy, which is thus carried forward by one of the packers 45 and left projecting beyond or above the remainder of the copies. This counting mechanism is not claimed herein, it being the subject-matter of claims in my Letters Patent aforesaid.

Instead of severing the sheets from the web or webs by the cutters of the cylinders 30 the sheets may be perforated or partially severed therefrom and be torn loose by means of the nipping-bar 60 and the roller or pulley 61. In this case the tapes 31 32 would accelerate the speed of the sheets severed, being suitably driven for that purpose. It is obvious that these tapes may be accelerating-tapes in the case first described as well as in the case just set forth.

The reference-numeral 62 indicates a train of gearing by means of which the cylinders and rotating parts of the folder D and folder 35 are driven from the side shaft 52 above named.

In the modified form of the packer-operating devices shown in Figs. 6 and 7 the shafts 47 are carried by disks 49, which are journaled on the shaft 63 or on studs journaled in the framework. Each shaft 47 is provided at one end with an arm 64, which is provided with a friction-roller 65. These antifriction-rollers 65 all engage with the stationary cam-groove 66, which is in a plate fixed to the framework of the machine. This cam 66 is so shaped that the packers 45 remain parallel, each to itself, while it is in contact with a copy delivered thereto by the rollers 43. At other times than the one just named the packers may follow any path whatever.

By increasing the distance between the axes 48 and 47 (see Fig. 3) the tips of the packers 45 may pass below the axis 48. This increase would permit of a single shaft extending clear across the machine being used instead of the studs 48 above described. In such case the shafts 47 could be carried by arms of such shaft, (48,) which could be driven in any suitable way.

The angle between the packers 45 and the arms 64 in the modification shown in Fig. 6 is preferably less than a right angle, though it may be a right angle.

I do not limit myself to the precise form of the invention hereinbefore described, since

many changes may be made in the embodiment thereof without departing from the spirit of the invention.

What I claim is—

1. The combination of mechanism for delivering folded products, a receiver for said products, a packer for pushing said products into or along said receiver, said packer having an orbital motion and a single support, and mechanism for maintaining said packer parallel to itself while in contact with the said products, substantially as described.

2. The combination of mechanism for delivering folded products, a receiver for said products, a packer for pushing said products into or along said receiver, a single pivoted support for said packer, means for rocking said packer, and means for giving an orbital motion to said support, substantially as described.

3. The combination of a delivery for folded products, a receiver for said products, one or more packers, a single pivoted support for each packer having an orbital motion, and mechanism for operating said packers to cause each to remain parallel to itself while in contact with a product, substantially as described.

4. The combination of a delivery for folded products, a receiver for said products, one or more packers, a single pivoted shaft for and to which each packer is fast, said shafts having an orbital motion, and mechanism for controlling said shafts to keep each packer parallel to itself while in contact with the products, substantially as described.

5. The combination of a delivery for folded products, a receiver for said products, one or more packers, a single pivoted shaft for and to which each packer is secured, said shafts having an orbital motion, gears on said shafts, and a stationary gear connected therewith, substantially as described.

6. In a printing-machine, the combination of a delivery for folded products, a receiver for said products, rotating arms or disks, one or more shafts journaled in said disks and each carrying a packer, and means acting on said journaled shafts to cause each packer to remain parallel to itself while in contact with the said products, substantially as described.

7. In a printing-machine, the combination of a delivery for folded products, a receiver for said products, rotating arms or disks, one or more shafts journaled in said disks and each carrying a packer, a gear on each of said journaled shafts, and a stationary gear connected therewith, substantially as described.

8. In a printing-machine, the combination of a delivery for folded products, a receiver

for said products, rotating arms or disks 49, shafts 47, packers 45, and gears 53, 54, 55, substantially as described.

9. In a printing-machine, the combination of a delivery for folded products, one or more packers, a single pivoted support for each packer, means for rocking said packer, means giving said supports an orbital motion, and moving tapes receiving the said products, substantially as described.

10. In a printing-machine, the combination of a delivery for folded products, one or more packers, a single pivoted support for each packer having an orbital motion, means causing each packer to remain substantially parallel to itself while in contact with the products, and moving tapes receiving the products, substantially as described.

11. In a printing-machine, the combination of roll-holder 7, pulley 10, pivoted arm 11, arm 13 adjustably and pivotally connected at one end with arm 11 and having slot 16 at the other end, a pin or stud 17, shaft 21 connected with arm 13, and a lever 23 on shaft 21, substantially as described.

12. In a printing-machine, the combination of roll-holder 7, pulley 10, pivoted arm 11, arm 13 adjustably and pivotally connected at one end with arm 11 and having slot 16 at the other end, a pin or stud 17, shaft 21 having a threaded end, threaded swiveled nut 18, and a lever 23 on the shaft 21, substantially as described.

13. In a printing-machine, the combination with a delivery for folded products, one or more packers, means causing each packer to remain substantially parallel to itself while in contact with the products, a receiver, and means intermittently arresting or delaying the descent of copies whereby they are caused to project, substantially as and for the purposes described.

14. The combination with the roll-carrier, of two arms for causing friction on the same, one arm being pivoted at one end to the framework, adjustable connections between the other end of said arm and one end of the second arm, and mechanism for moving said second arm operating it at its free end, whereby the friction may be varied from either side of said carrier, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 10th day of October, 1893.

WALTER SCOTT.

Witnesses:

FREDERIC GOODWIN,
RICHARD W. BARKLEY.