

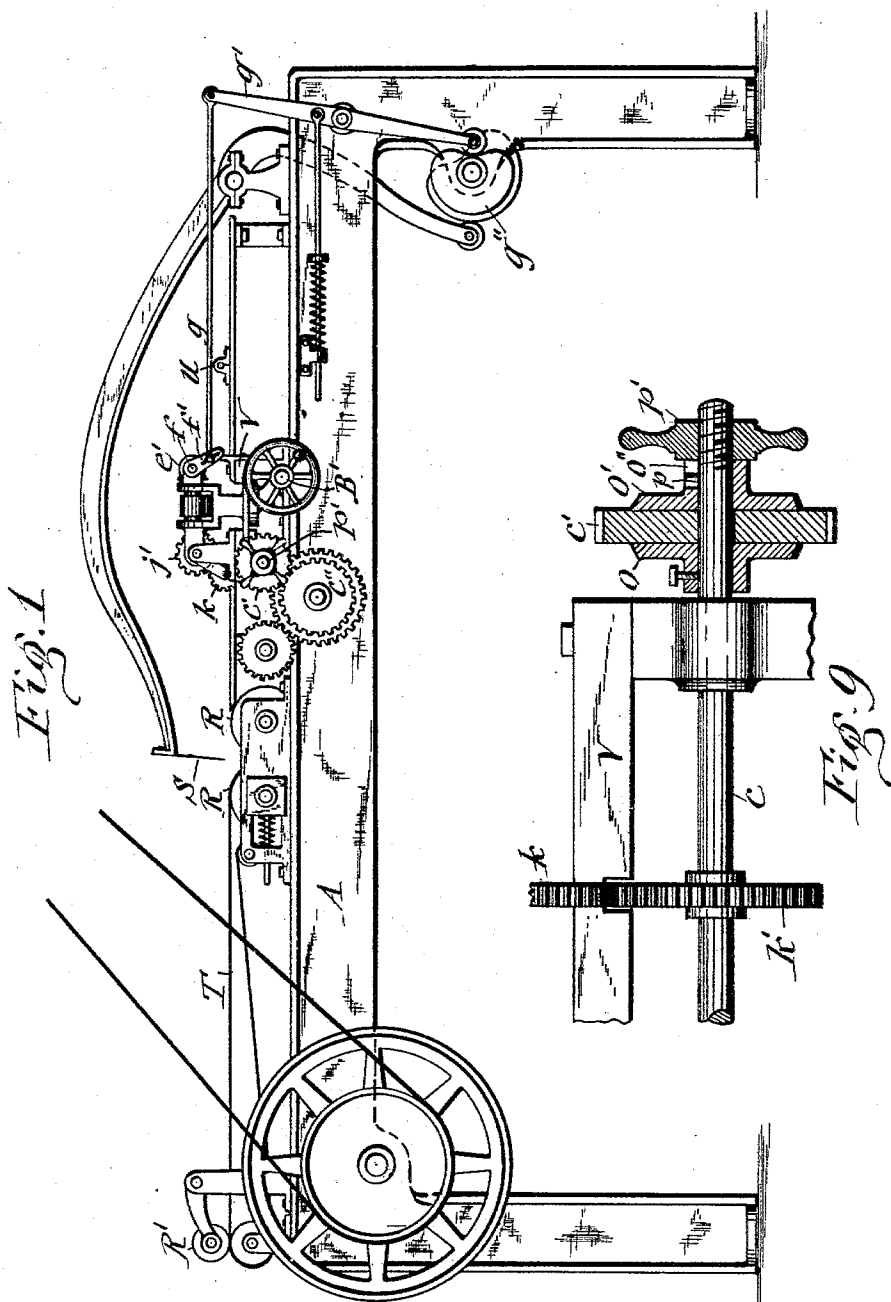
(No Model.)

5 Sheets—Sheet 1.

T. C. DEXTER.
PAPER REGISTERING MACHINE.

No. 561,936.

Patented June 9, 1896.



WITNESSES:

C. L. Bendixon
J. J. Laas

INVENTOR:

Talbot C. Dexter
By E. Laas
his ATTORNEY

(No Model.)

5 Sheets—Sheet 2.

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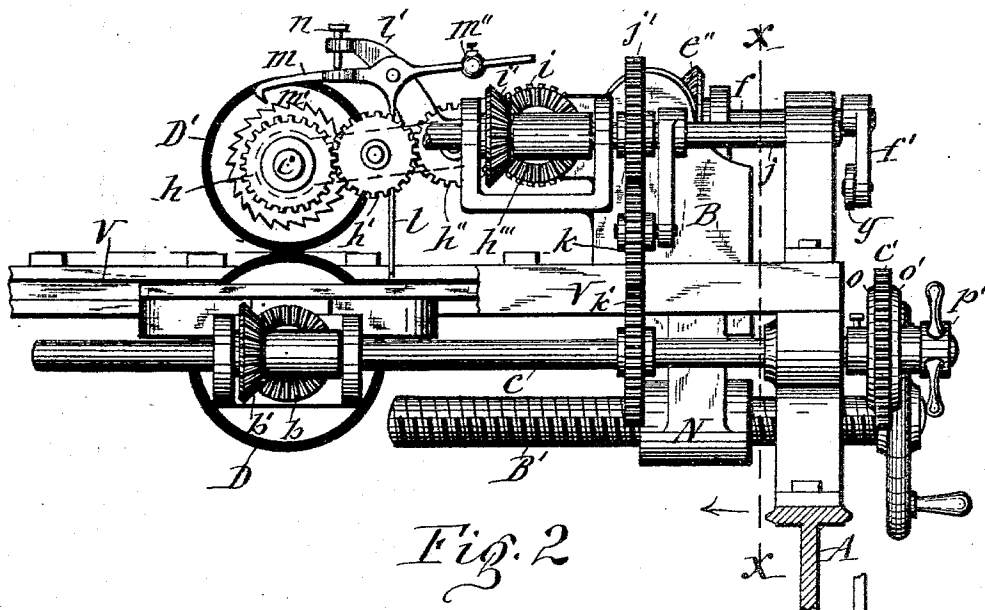


Fig. 2

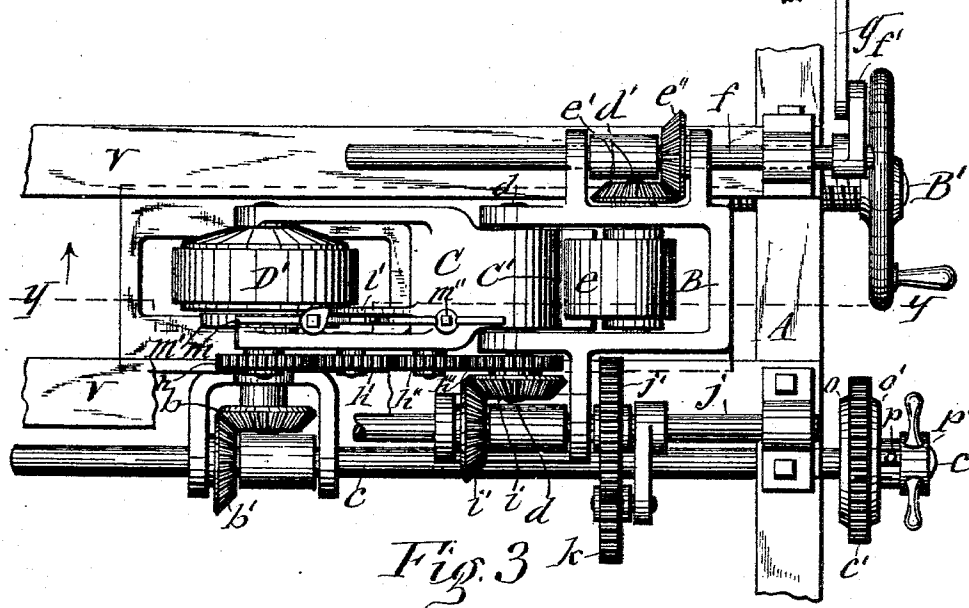


Fig. 3

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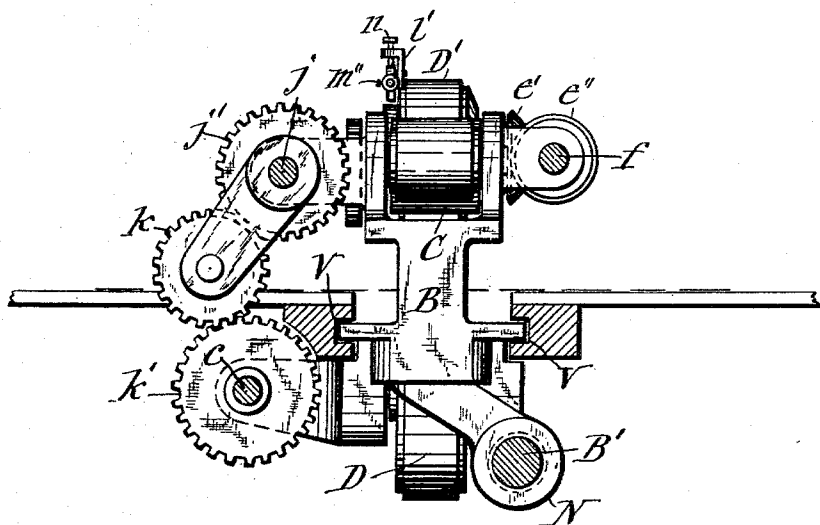


Fig. 4

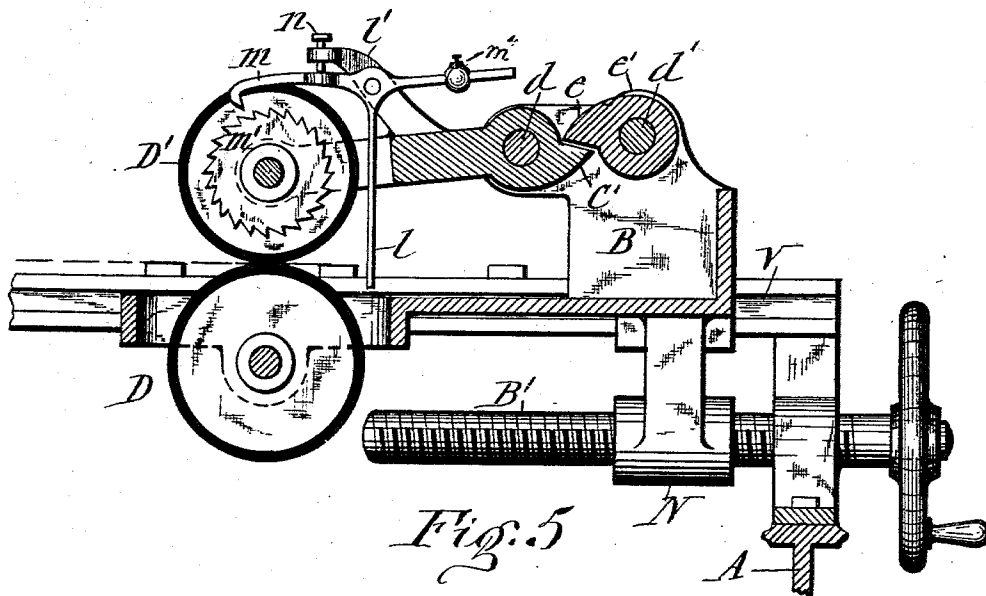


Fig. 5

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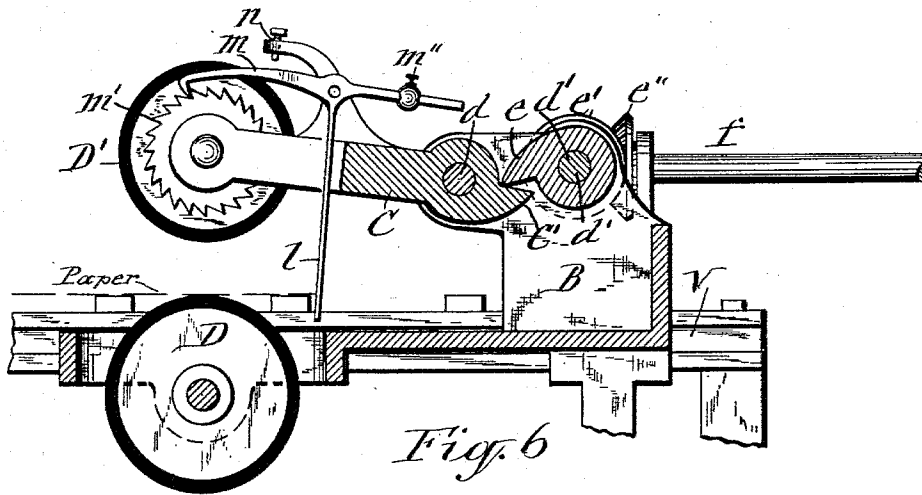


Fig. 6

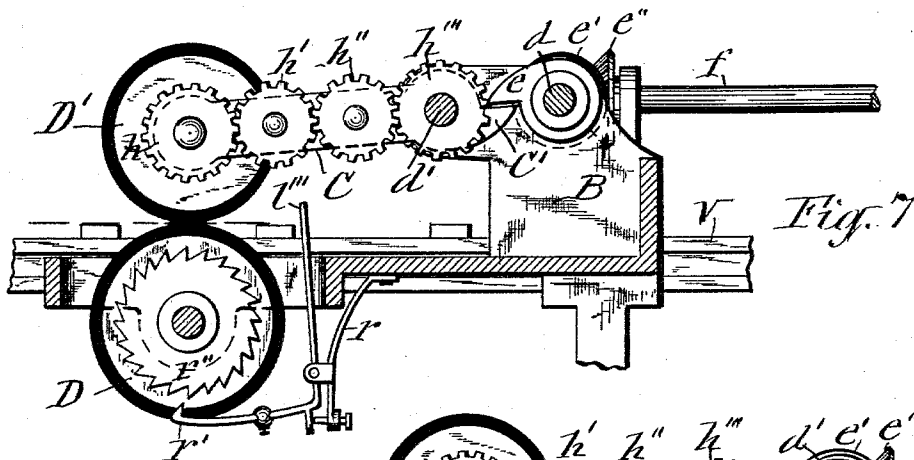


Fig. 7

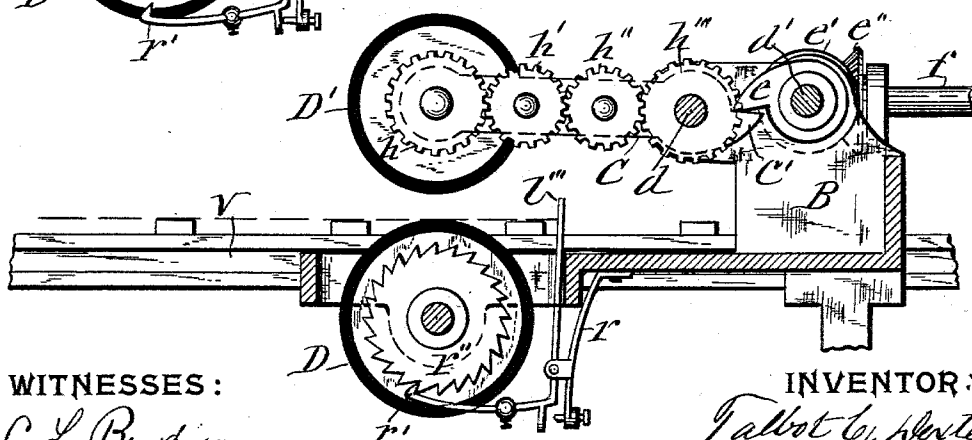


Fig. 8

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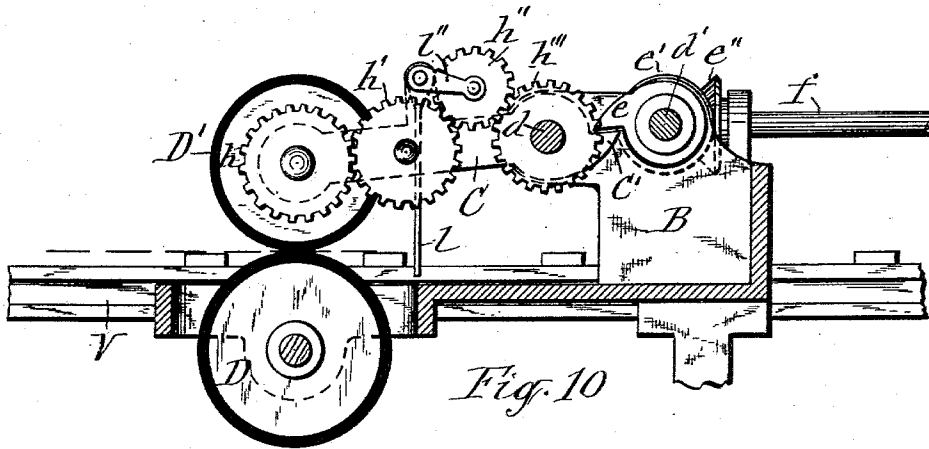


Fig. 10

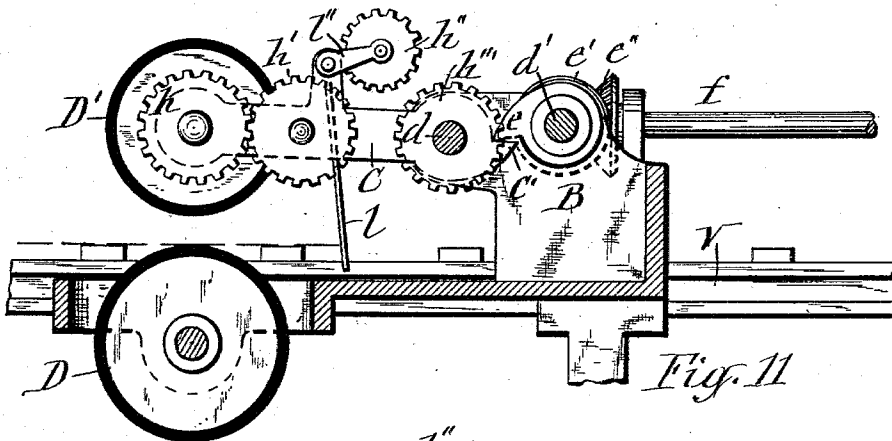


Fig. 11

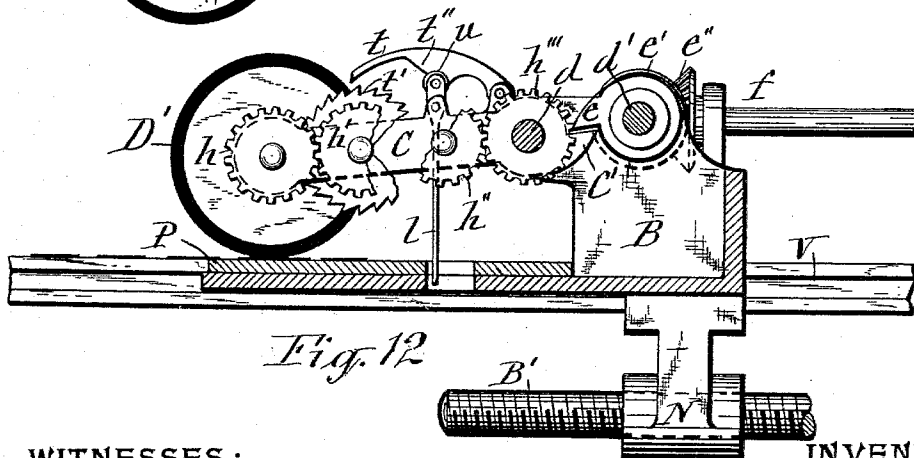


Fig. 12

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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO THE
DEXTER FOLDER COMPANY, OF NEW YORK, N. Y.

PAPER-REGISTERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 561,936, dated June 9, 1896.

Application filed October 25, 1895. Serial No. 566,813. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, of Pearl River, in the county of Rockland, in the State of New York, have invented new and useful Improvements in Paper-Registering Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the type of paper-registering mechanisms which draw the paper to registering position by means of rollers receiving said paper between them, as represented in my Letters Patent of the United States No. 528,657, dated November 6, 1894. Although said registering mechanism has proved to perform its desired function in the majority of cases, yet in some instances, where the paper to be registered had a smooth surface, it has been found that the said paper did not afford the requisite frictional hold for the rollers to shift the paper to its registering position, owing to the vertically-yielding drop-roller receiving its rotary motion solely by friction with the paper, and therefore presenting more or less resistance to the movement of the paper.

The object of my present invention is to obviate said defects, and also to effect the registering of the paper by purely mechanical devices; and to that end the invention consists, essentially, in the combination of a roller disposed with its periphery in the path of the paper to shift said paper to its registering position, a gear partially restrained from rotating, mechanism transmitting motion from said gear to the roller, and a detent actuated by the shifting paper and positively locking the roller from rotating; and the invention also consists in certain novel features of the details of the component parts, all as hereinafter more fully described, and set forth in the claims.

In the annexed drawings, Figure 1 is a side elevation of that part of a paper-folding machine to which the registering mechanism is applied, said view being designed to show more particularly the means of transmitting motion to the registering mechanism. Fig. 2 is an enlarged side view of my improved paper-registering mechanism. Fig. 3 is a plan view of the same. Fig. 4 is a vertical trans-

verse section on line X X in Fig. 2. Figs. 5 and 6 are sectional views of the drop-roller with the detent for arresting the rotary motion of said roller and for lifting the same from the paper, taken on line *yy* in Fig. 3. Figs. 7 and 8 are sectional views of modifications of said parts. Fig. 9 is a sectional view of the partially-restrained driving-gear, and Figs. 10, 11, and 12 are sectional views of modifications of the detent.

Similar letters of reference indicate corresponding parts.

A denotes the main supporting-frame of a paper-folding machine, which is provided with the usual rotary rollers R R, which receive between them and fold the paper introduced by the folding-blade S. The paper is fed to the machine under the drop-rollers R' and is carried along over the fold-rollers R R by the usual traveling tapes T and is arrested in said movement by the usual end gage or side guide U, which leaves the paper lying with the center of its length over the bite of the fold-rolls.

The requisite registering or alining of the paper preparatory to introducing it between the fold-rolls is effected by automatically-operating mechanisms, to which my present invention relates and which embodies the principle of registering the paper by rollers gripping the paper between them and drawing the same laterally to a yielding gage, which by the medium of auxiliary devices causes the said paper-shifting rollers to lose their grip on the paper and leave the same in its registered position.

My improved registering mechanism is constructed to operate as follows: Upon the side of the frame A are mounted the horizontal ways V V, which extend part way under the path of the paper and at right angles thereto. Upon these ways rides the bracket B, which is secured longitudinally adjustable in relation to the ways by means of the screw B', which is parallel with the ways and journaled in a suitable bearing on the frame A and passes through a nut N, attached to the bracket B, as shown in my Patent No. 528,657, hereinbefore mentioned.

D represents the rubber-faced roller, which is immediately beneath the path of the paper

and journaled in hangers depending from a forward extension of the base of the bracket B. Said roller rotates with the top of its periphery rearward or toward the adjacent side of the frame A, and receives motion either by worm-gearing, as shown in my prior patent aforesaid, or by a miter-pinion *b*, attached to the shaft of said roller and meshing with a similar pinion *b'*, mounted on a horizontal shaft *c*, which extends to the side of the frame A and has on it a gear-wheel *c'*, attached to it in the manner hereinafter described, and receiving motion from one of the driving-gears *c''* of the folding-machine.

C denotes the vertically-oscillatory arm, which is over the path of the paper and pivotally connected at one end to a pin *d*, passing transversely through the bracket B. To the free end of this arm is pivoted the rubber-faced roller *D'*, which is directly over the roller D and parallel therewith. The outer or rear end of said arm is formed with a rearwardly-extending heel *C'*, and back of this heel is a rock-shaft *d'*, which extends transversely through the bracket B and is journaled therein. To this shaft is fastened a lug *e*, which during the oscillation of the said rock-shaft presses upon the top of heel *C'* sufficiently to rock the arm, so as to intermittently lift the roller *D'* from the lower roller D. Said rock-shaft receives its motion by means of a miter-pinion *e'*, attached to said shaft and engaging a similar pinion *e''*, attached to a rock-shaft *f*, which extends to the side of the frame A and has affixed to its end a crank *f'*, which is connected by a pitman *g* to a lever *g'*, pivoted to the frame A and oscillated by a rotary cam *g''*, as shown in Fig. 1 of the drawings.

Heretofore I have employed only the lower roller D for furnishing the power required for shifting the paper to its registering position. The upper roller or drop-roller *D'* merely served to press the paper with sufficient force down upon the lower roller D to cause the latter to receive the requisite frictional hold on the paper. This I have found in practice is not always reliable to effect the shifting of the paper, as hereinbefore stated. To obviate this defect, I now employ suitable mechanism for imparting to the upper roller *D'* a rotary motion which is synchronous with that of the lower roller and by frictional hold on the paper exerts a propelling force on said paper.

For imparting said rotary motion to the upper roller *D'*, I prefer to attach to the shaft of said roller a pinion *h*, which is one of a train of gears preferably consisting of intermeshing pinions *h'* and *h''*, pivoted to the side of the arm G, and a pinion *h'''*, mounted loosely on the pivot-pin *d* of the said arm. The latter pinion *h'''* is attached to or integral with a miter-pinion *i*, which meshes with a corresponding pinion *i'*, attached to a shaft *j*, which extends to the outer end of the bracket B and is journaled in suitable bear-

ings on the side of said bracket, as shown in Fig. 2 of the drawings. The shaft *j* has attached to it a gear-wheel *j'*, which by an intermediate gear *k* receives rotary motion from a gear-wheel *k'*, attached to the shaft *c*, heretofore referred to.

In order to automatically arrest the rotary motion of the roller *D'* at the moment the paper has been shifted to its requisite registering position, I employ a suitable detent, arranged in the path of the paper, so as to be actuated by the shifting paper and lock the aforesaid roller from rotating. Said detent I prefer to form of a light finger *l*, of metal or other suitable material, pivoted to a suitable support *l'*, fastened to the arm C, the free end of which finger is in the path of the paper shifted laterally by the rollers D *D'*. From the pivoted end of the said finger extends a pawl *m*, which is adapted to engage a ratchet-disk *m'*, attached either to the side of the roller *D'* or to the shaft thereof. A weight *m''*, connected in a suitable position to the finger, counterbalances the pawl *m*, so as to hold the same normally out of engagement with the ratchet-wheel *m'*. A suitable adjustable stop, such as a set-screw *n*, connected to the support *l'*, limits the movement of the pawl from its engagement and also at the same time the movement of the finger *l* to its normal position. The free end of the finger *l* is so near to the rollers D *D'* as to enable the short intervening portion of the paper to possess sufficient stiffness to push the said finger with the requisite force to overcome the weight *m''* and throw the pawl *m* into engagement with the ratchet *m'*. To permit the aforesaid positive arrest of the motion of the roller *D'*, I employ a suitably-yielding friction-clutch connection between the shaft *c* and the gear *c'*, which transmits motion from the driving-gear *c''* to said shaft. This yielding connection I prefer to make adjustable to regulate the degree of resistance to the transmission of motion from the gear *c'*, and this may be accomplished by mounting the said gear loosely on the shaft *c* and firmly securing to said shaft a friction-disk *o*, adjacent to one side of the gear *c'*, and mounting loosely on said shaft at the opposite side of said gear another friction-disk *o'*, the hub of which is provided with a longitudinal slot *o''*, into which projects a stud-pin *p*, fastened to the shaft, and thus causing said disk to rotate with the shaft. The end portion of the shaft is screw-threaded, and to this is connected a nut *p'*, which may be turned to cause it to force the friction-disk *o'* with greater or less force against the side of the gear *c'*, and thus increase or diminish the power of transmitting motion from the gear *c''* to the shaft *c*, as more clearly illustrated in Fig. 9 of the drawings. Said yielding connection of the gear *c'* to the shaft *c* allows said gear to slip on its shaft while the motion of the roller *D'* is arrested by the detent *l* through the medium of the

pawl *m* and ratchet-wheel *m'*. I do not, however, wish to be limited to the use of the described pawl *m* and ratchet *m'* for arresting the rotary motion of the roller *D'*, inasmuch as the same effect may be produced by pivoting one of the intermediate pinions *h''* to an arm *l''*, extending from the pivoted portion of the finger *l*, as shown in Figs. 10 and 11 of the drawings. The motion imparted to said finger by the edge of the shifting paper coming in contact therewith throws the pinion *h''* out of engagement with the adjacent pinion of the train which transmits motion to the roller *D'*. Hence the transmission of motion to said roller is prevented. Neither do I wish to be limited to the use of the detent for arresting the motion of the upper roller *D'*, because the detent *l'''* may be employed for arresting the motion of the lower roller *D* by pivoting said detent to a hanger *r* on the base of the bracket *B* in such a manner as to allow the pawl *r'* of said detent to engage a ratchet-disk *r''*, attached to said roller, as represented in Figs. 7 and 8 of the drawings. The vertical movement of the arm *C* is invariably timed to lift the roller *D'* from the paper the moment the paper has arrived at its registering position.

It is obvious that in the employment of the geared upper roller the lower roller *D* may be dispensed with and in its stead the smooth plate *P*, which is attached to the base of the bracket *B*, may be employed to support the paper under pressure of the upper roller *D'*, as illustrated in Fig. 12 of the drawings, which also shows a further modification of the construction of the detent and the means employed in connection therewith for arresting the motion of the upper roller. By thus dispensing with the lower roller and its driving mechanism the construction is materially simplified and the cost of the manufacture of the registering-machine is correspondingly reduced. Hence I do not limit myself to the combination of the geared upper roller with a roller under the path of the paper for supporting the paper under pressure of the upper roller.

The aforesaid modification of the construction of the detent *l* and devices operated thereby consists in the attachment of the ratchet-wheel *t'* to the gear *h'* and the pivoting of the dog *t* to the arm *C*. Said dog is formed with an inclined portion *t''*, which is traversed by a roller *U*, pivoted to an upward extension of the finger *l*, which latter, when tilted by the shifting paper, allows the aforesaid dog to drop into engagement with the ratchet-wheel.

What I claim as my invention is—

1. A paper-registering machine comprising a roller disposed with its periphery over the path of the paper and geared to rotate and shift the paper to its registering position, a detent in the path of the paper to come in contact with the edge thereof and become actuated thereby to arrest the rotation of said

roller, and a support for the paper directly under the roller as set forth.

2. A paper-registering machine comprising a roller disposed with its periphery in contact with one of the surfaces of the paper and geared to rotate and shift said paper, a paper-support in contact with the opposite surface of the paper, a driving-gear transmitting motion to the gears of the aforesaid roller and mounted loosely on its shaft, a friction-clutch transmitting motion from said driving-gear to the shaft, a ratchet-disk attached to the side of the aforesaid roller, and a detent actuated by the shifting paper and provided with a pawl engaging the ratchet-disk to lock the roller from rotating, as set forth.

3. In a paper-registering machine, the combination of two paper-shifting rollers receiving the paper between them and both geared to rotate in unison, a driving-gear transmitting motion in common to the gears of the two rollers and mounted loosely on its shaft, a friction-clutch transmitting motion from said driving-gear to the shaft, a ratchet-disk attached to the side of one of said rollers, and a detent actuated by contact with the shifting paper and provided with a pawl engaging the ratchet-disk to lock said roller and thereby restrain the driving-gear from transmitting motion to the gears of the companion roller as set forth.

4. A paper-registering machine comprising a drop-roller falling intermittently upon the paper to be registered, mechanism imparting rotary motion to said roller to draw the paper to registering position, and a detent actuated by the shifting paper and arresting the rotary motion of said roller.

5. A paper-registering machine comprising a drop-roller falling intermittently upon the paper to be registered, mechanism imparting rotary motion to said roller to cause the same to draw the paper to registering position by frictional hold on said paper, a ratchet-disk concentric with and secured to said drop-roller, a pawl normally out of engagement with the ratchet-disk, and a detent actuated by the shifting paper and throwing the pawl into engagement.

6. In combination with the vertically-oscillatory arm over the path of the paper to be registered and a paper-shifting roller pivoted to the free end of said arm, gears pivoted to said arm and transmitting rotary motion from the driving mechanism of the machine to the drop-roller, and a detent actuated by the shifting paper and arresting rotary motion of said roller.

7. In combination with the paper-shifting roller and driving-shaft, a gear mounted loosely on said shaft, a friction-clutch transmitting motion from said gear to the shaft, mechanism transmitting motion from said gear to the aforesaid roller, a ratchet-disk fixed to the roller, a pawl normally out of engagement with said ratchet-wheel, and a detent actuated by the shifting paper and throw-

ing the pawl into engagement as set forth and shown.

8. The combination with the bracket B of the drop-roller arm C pivoted to said bracket and provided with rearwardly-extending heel C', the rock-shaft *a* pivoted to the bracket back of the pivot of the arm and provided with the lug *a'* engaging the aforesaid heel, and gears journaled on the aforesaid arm and to

the pivot thereof and transmitting motion to the roller journaled on the free end of the arm as set forth and shown.

In testimony whereof I have hereunto signed my name this 10th day of October, 1895.

TALBOT C. DEXTER. [L. S.]

Witnesses:

JAS. A. WHITLOCK,

J. J. LAASS.