

No. 648,162.

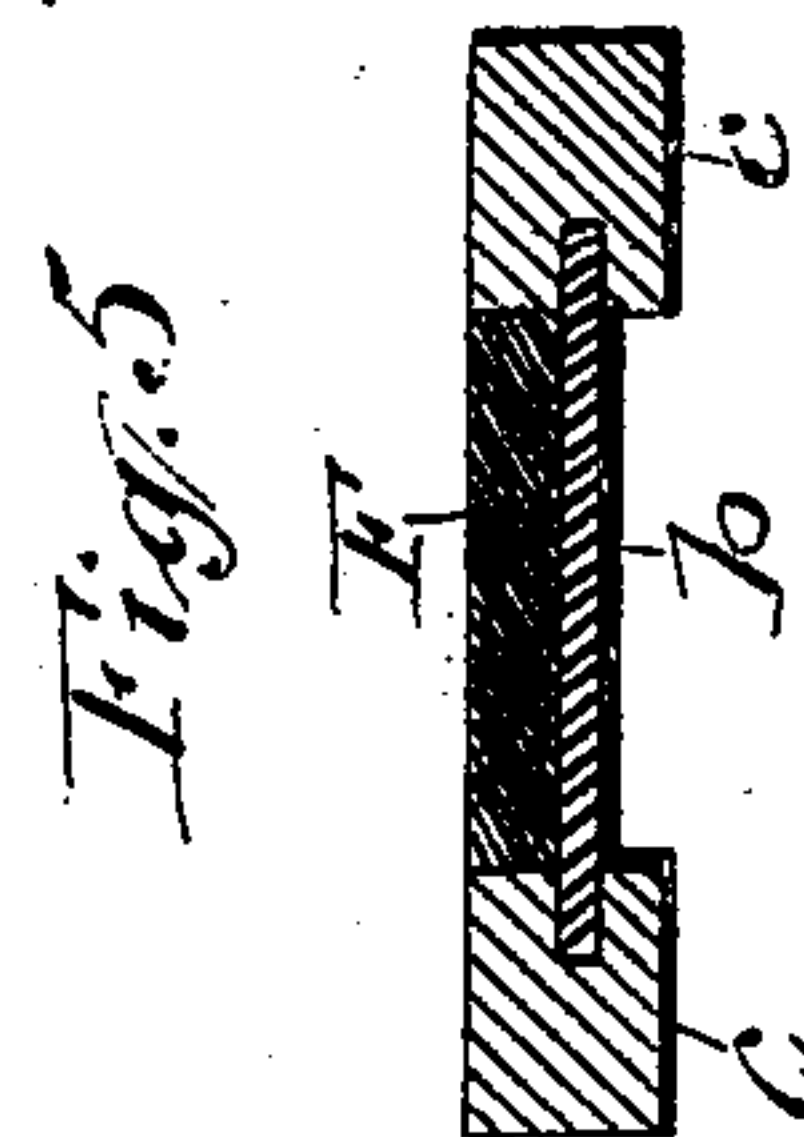
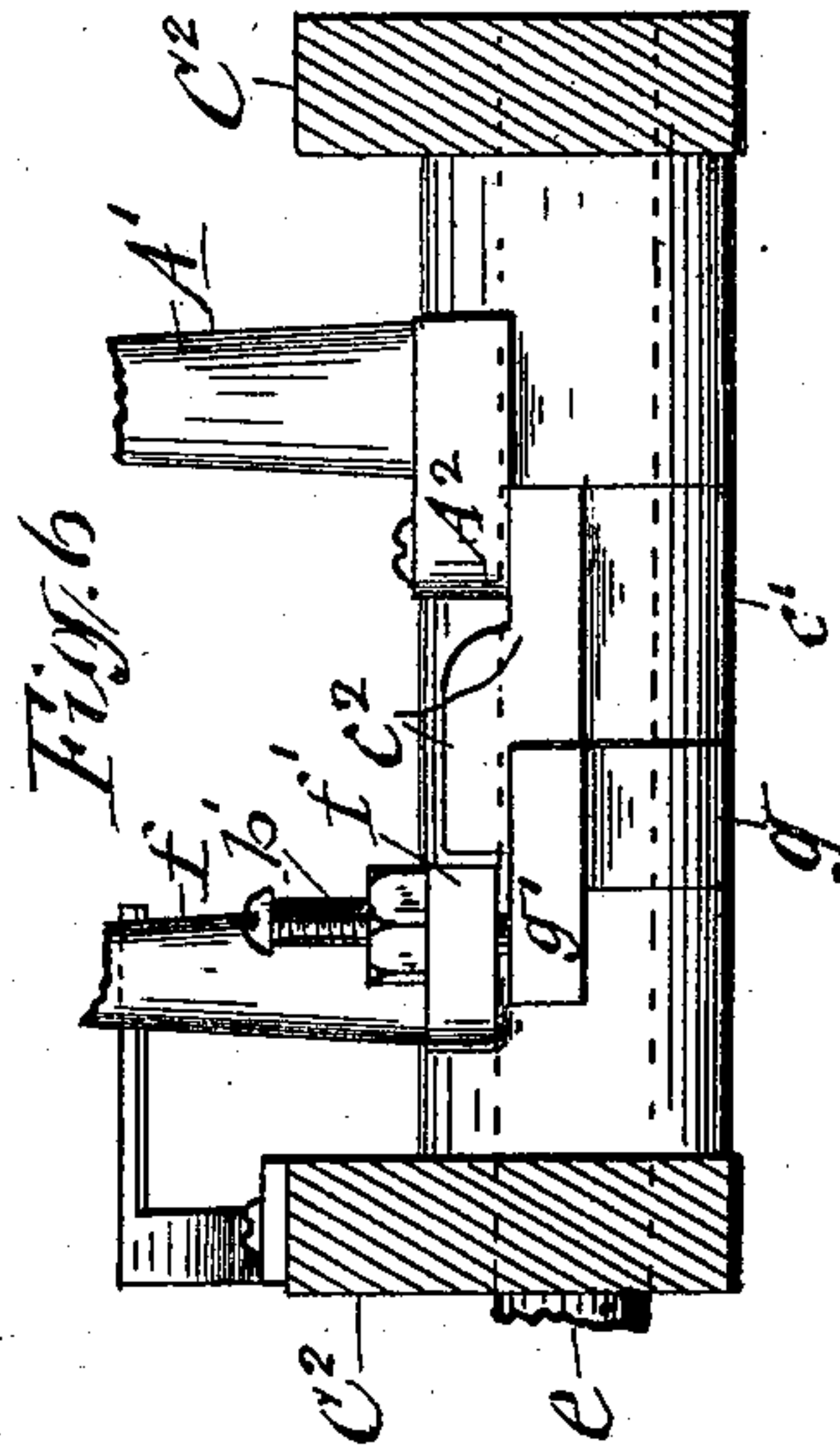
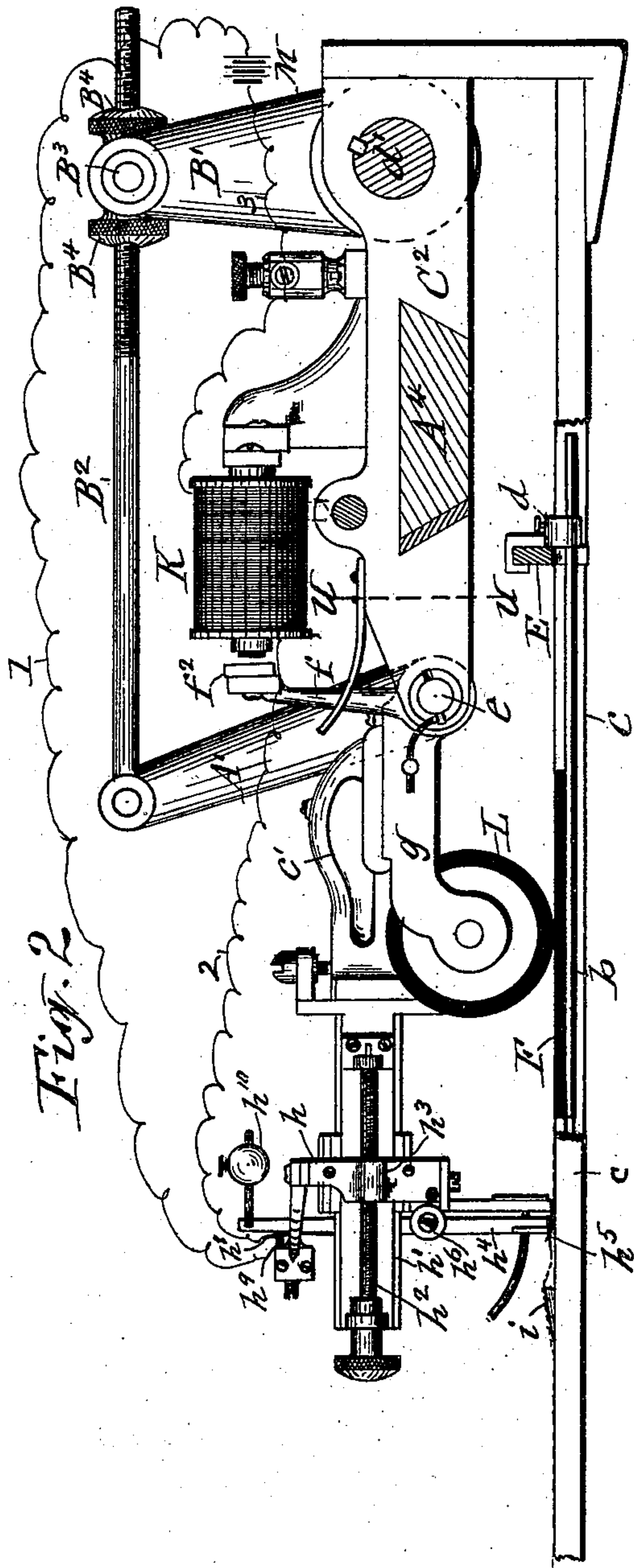
Patented Apr. 24, 1900.

T. C. DEXTER.
PAPER REGISTERING MECHANISM.

(Application filed Mar. 28, 1899.)

(No Model.)

4 Sheets—Sheet 2.



WITNESSES:

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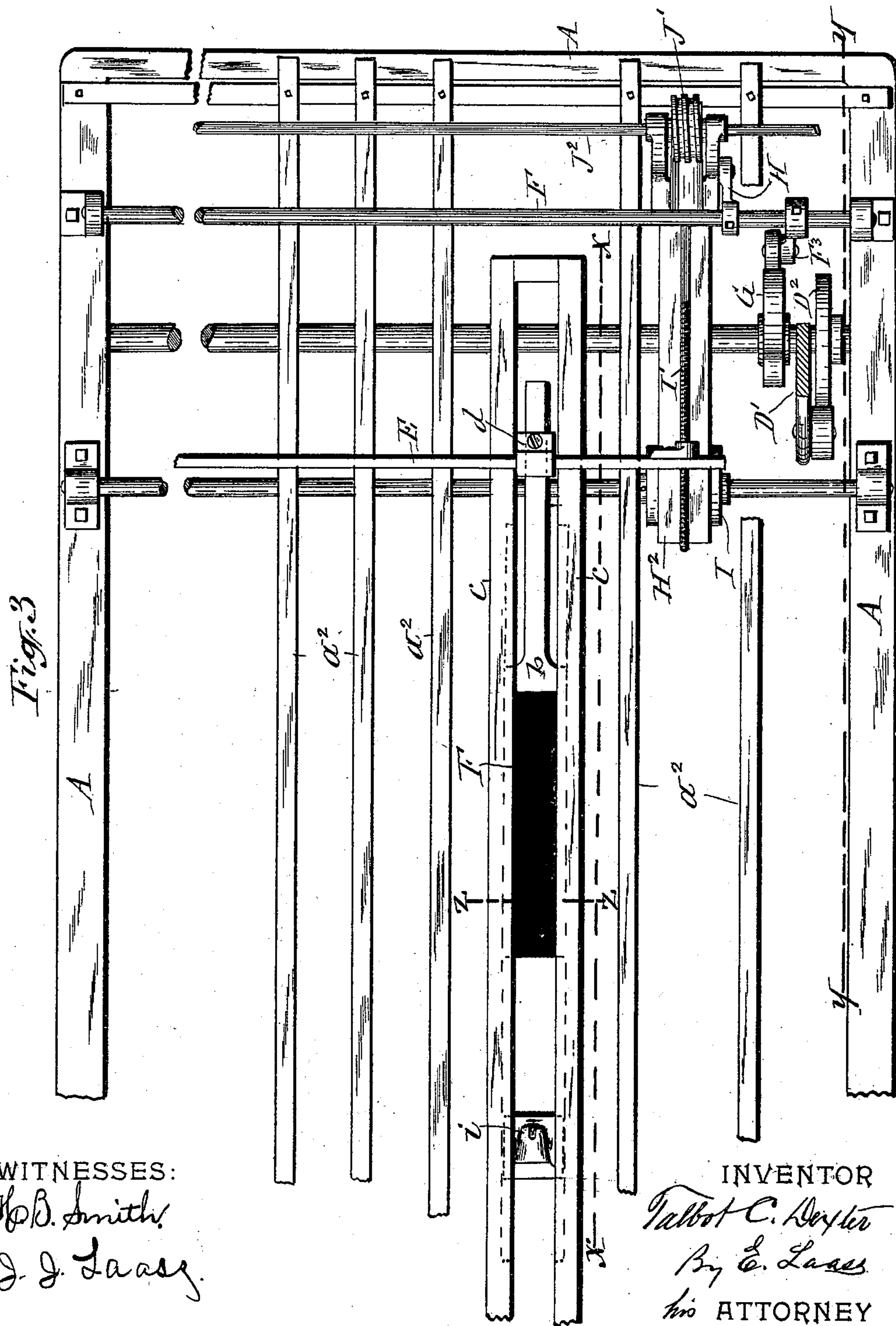
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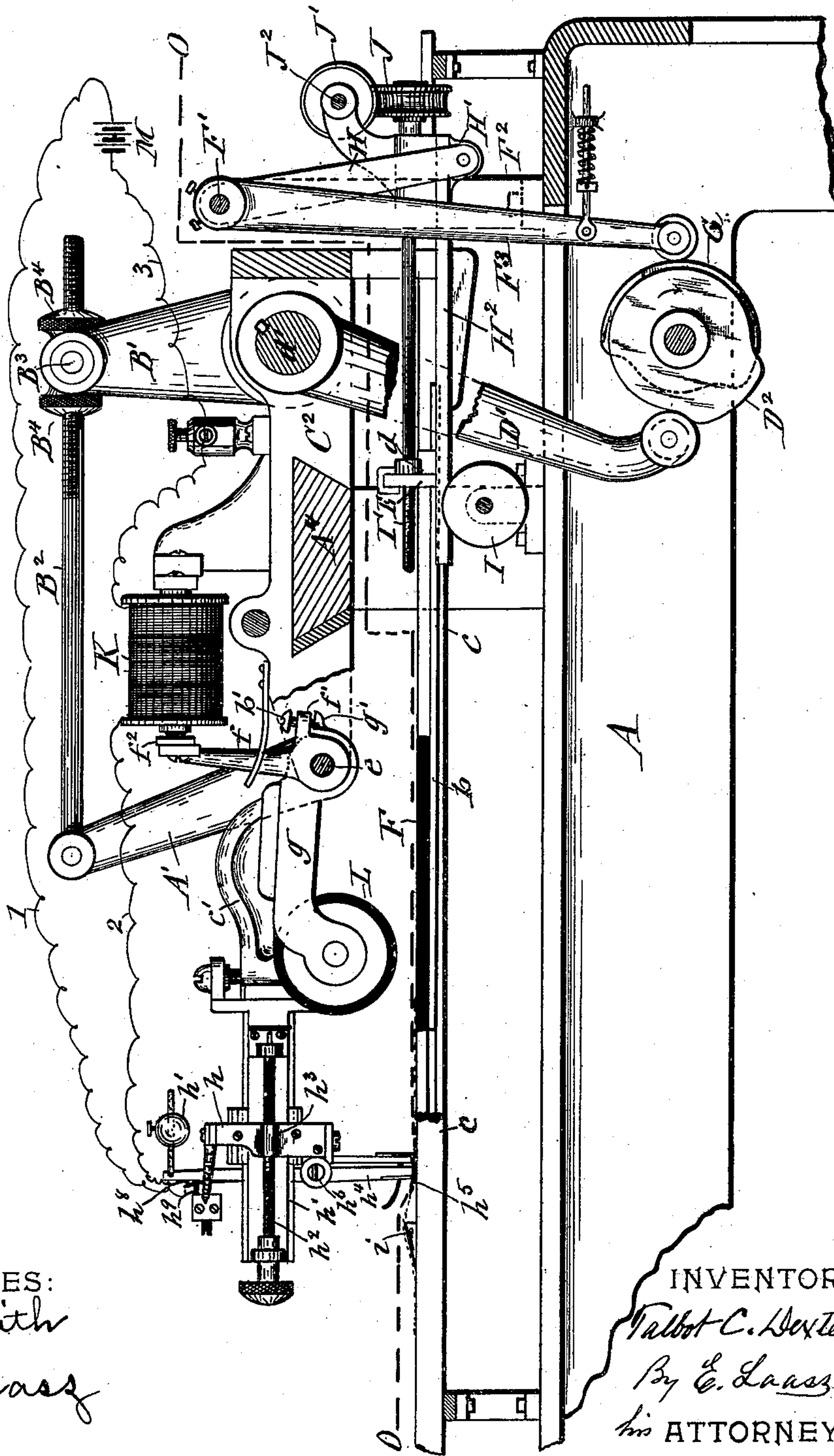
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4 Sheets—Sheet 4.

Fig. 4



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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO THE
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PAPER-REGISTERING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 648,162, dated April 24, 1900.

Application filed March 28, 1899. Serial No. 710,781. (No model.)

To all whom it may concern:

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

This invention relates to an improvement in registering mechanism employed in connection with paper-folding machines and analogous machines of that character for the purpose of moving the sheet of paper to a predetermined position to be folded or otherwise operated on; and the invention relates to the mechanism shown and described in my Letters Patent No. 575,150, dated January 12, 1897, and more particularly to my application for patent, Serial No. 682,316, filed June 2, 1898, in which application the registering mechanism is employed in connection with a paper-folding machine and comprises, essentially, an electromagnetically-controlled drop-roller for pressing the sheet of paper in contact with a friction-roller located directly below the drop-roller for the purpose of imparting a secondary advance movement to the sheet after it has been arrested by the usual front stop or gage, whereby a pin or attenuated tongue with which the registering instrument proper is equipped engages a slit provided in the paper, and thus the sheet is arrested in its latter movement, with its predetermined line of folding directly over the bite of the folding-rollers.

In practice it has been found that owing to the peculiar construction of the folding-machines in some cases it is not convenient to employ the friction-roller hereinbefore referred to nor the gearing which is required to impart the motion thereto. It has also been found that in operating on certain qualities of paper, especially calendered paper, sufficient frictional hold on the paper is not obtained by the use of the frictional roller.

The object of my present invention is to overcome the aforesaid difficulties by simple, inexpensive, and efficient means; and to that end my invention consists, mainly, in a paper-folding machine or analogous machine

designed to operate on sheets of paper, the combination, with a receding front gage arresting the sheet fed into the machine, of a paper-registering mechanism comprising a longitudinally-reciprocating bed operated by said gage and receiving upon it the sheet to be registered, an electromagnetically-controlled drop-roller pressing the sheet periodically into frictional contact with said bed to impart a secondary advance movement to the sheet to carry the sheet to its registered position, and a registering instrument provided with a pin or point entering a slit provided in the sheet to arrest the sheet in said position, as hereinafter more fully described; and the invention also consists in certain novel details of construction, as hereinafter fully described, and set forth in the claims.

In the annexed drawings, Figure 1 is a side elevation of a paper-folding machine equipped with my improved paper-registering mechanism shown in position for receiving the paper. Fig. 2 is an enlarged vertical longitudinal section on line X X in Fig. 3, showing the registering instrument in operative position. Fig. 3 is a plan view taken in a plane beneath the line o o in Fig. 4. Fig. 4 is a vertical longitudinal section on line y y in Fig. 3 and showing the registering instrument in its position when the paper is registered. Fig. 5 is an enlarged transverse section on line z z in Fig. 3, and Fig. 6 is an enlarged transverse section on line U U in Fig. 2.

Similar letters and figures of reference indicate corresponding parts.

A represents the main supporting-frame of a paper-folding machine. B B designate the paper-folding rollers, C is the blade which introduces the paper between the folding-rollers in the usual and well-known manner, and a a are the tapes which convey the paper into the machine. a' a' are the bars which are arranged between the tapes to assist the tapes in conveying the paper. D is a rotary roller which by the aid of the usual drop-rollers D' feeds the paper to the top of the aforesaid tapes. a² a² are the usual bars which support the portion of the paper beyond the folding-rollers, and E represents the alternately advancing and receding stop or gage, which ar-

rests the movement of the sheet carried into the machine by the tapes *a a*. All of the said parts are of the usual construction, and any suitable and well-known mechanisms may be employed for operating the aforesaid rollers and folding-blade, and therefore need no special description in the present case.

My improved registering mechanism is employed for the purpose of automatically and accurately registering the sheet of paper or, in other words, to properly adjust the sheet to bring the predetermined line of folding thereof directly over and parallel with the bite of the folding-rollers before the sheet is introduced between the said rollers by the folding-blade hereinbefore referred to. Said registering mechanism is constructed as follows:

F F denote two longitudinally-reciprocating beds, which are disposed at opposite sides and parallel with the longitudinal central line of the machine. Said beds are preferably formed of flat pieces or pads of soft rubber or other suitable material capable of obtaining a sufficient frictional hold on the sheet of paper pressed into contact therewith to move the sheet with the travel of the beds, as hereinafter explained. The beds are secured to plates *b b*, which slide in longitudinal grooves in stationary horizontal bars *c c* and are secured to the gage *E*, preferably by means of blocks *d d*, attached to the gage and provided with openings through which the front end portions of the plates pass and in which they are retained by set-screws passing through said blocks and engaging said plates, whereby the beds are caused to move with the alternately advancing and receding gage *E*. The described connection of the plates *b b* to the gage permits said plates to be adjusted to carry the beds *F F* a greater or less distance from the gage, and thus maintain said beds in proper position in relation to the drop-rollers *L L*, while the gage is adjusted for sheets of different widths, as hereinafter described. Said gage is operated by preferably the same mechanism as shown in the patent and application hereinbefore referred to, which mechanism comprises a rock-shaft *F'*, extending across the machine and supported in suitable bearings on posts *F²*, mounted on the main frame *A*. An arm *F³*, secured to said shaft, has pivoted to its free end a roller, by which it bears on a rotary cam *G*, which imparts oscillatory motion to said arm. Two other arms *H H* are fastened in suspended positions to the shaft *F'* and are connected at their lower ends to blocks *H' H'*, attached to the outer ends of bars *H² H²*, which ride with their inner ends on supporting-rollers *I I*. Upon said bars is adjustably supported the gage *E*, which is provided with screw-threaded eyes, through which pass the screw-threaded portions of the longitudinal rods *I' I'*, journaled in the blocks *H' H'*. To the outer ends of the screw-rods *I' I'* are fastened worm-gears *J J*, which engage corresponding

gears *J' J'*, secured to a transverse shaft *J²*, which is journaled to arms projecting from the blocks *H'*. The end of the shaft *J²* is provided with a hand-wheel for turning said shaft, and thereby imparting motion to the screw-rods *I'*. In this manner the gage *E* is adjusted in its position to conform to different-sized sheets fed into the machine.

Upon the sides of the main frame *A* of the machine is supported a stationary cross-bar *A⁴*, upon which is mounted at right angles the supporting-bracket *C²* of the registering instrument. To the inner end of the bracket *C²* is fastened a transverse shaft *e*, upon which is loosely mounted a lever *f*, which extends upward therefrom and has fastened to its upper end the armature *f*, which faces the magnet *k*, mounted on the bracket *c²*. On the same shaft *e* and adjacent to the lever *f* is also loosely mounted an arm *g*, to the free end of which is pivoted the drop-roller *L*, said arm having a lug *g'* projecting from its hub. A similar lug *f'* projects from the hub of the lever *f* and bears upon the top of the lug *g'*, preferably by means of a set-screw *b'*, passing vertically through the lug *f'*, whereby the lever *f* can be adjusted to carry the armature *f²* at a proper distance from the magnet *K*. Adjacent to the drop-roller arm *g* is a longitudinal arm *c'*, also loosely mounted on the shaft *e* and provided on its hub with a lug *c²*, by which it bears on the lug *g'*. At the side of the arm *c'* is a rock-arm *A'*, mounted loosely on the shaft *e* and provided with a lug *A²*, which is fastened to the lug *c²* by a screw *A³*, and thus causes the arm *c'* to move synchronously with the rock-arm *A'*. Said rock-arm derives its motion from another rock-arm *B'*, with which it is adjustably connected by a screw-rod *B²*, which is pivoted at one end to the arm *A'* and passes with its screw-threaded opposite end through a collar *B³*, pivoted to the arm *B'*. By means of nuts *B⁴ B⁴* on said screw-threaded portion of the rod at opposite sides of the collar *B³* the distance between the free ends of the two rock-arms can be increased or diminished as may be required to cause the free end of the longitudinal arm *c'* to be moved the proper distance toward and from the plane of the paper-supporting bars *a² a²*.

The rock-arm *B'* is fastened to a transverse shaft *d'*, journaled in the bracket *C²* and extending to the side of the main frame *A*, where it has attached to it a lever *D'*, the free end of which has pivoted to it a roller, by which it bears on a rotary cam *D²*. Said cam is shaped with two steps to impart to the rock-arms *B'* and *A'* two successive increased thrusts, and thereby causes the longitudinal arm *c'* to receive two successive increased lifts for the purpose hereinafter explained. On said longitudinal arm is mounted the registering instrument proper, consisting of a vertical bracket *h*, riding on a guide *h'*, extending from the end of the arm *c'* and adjusted longitudinally therein by a screw *h²*,

journaled in suitable bearings on the arm
 and passing through a nut h^3 on the bracket
 h . To the said bracket beneath the guide h' is
 pivoted a vertical lever h^4 , the foot of which is
 5 provided with the point or attenuated tongue
 h^5 for engaging the slit made in the paper for
 that purpose. Said lever is insulated from
 the bracket h by the pivot-screw h^6 bearing
 on a rubber hub h^7 , secured to the lever. On
 10 the upper end of this lever is the terminal h^8 ,
 facing the terminal h^9 , attached to the bracket
 h and held normally out of contact there-
 with by a counterbalance h^{10} , connected to
 said lever. From the terminal h^8 to the bat-
 15 tery M extends a wire 1, and from the other
 terminal h^9 to the magnet K extends a wire
 2, which magnet is connected to the battery
 by a wire 3. Said wire connection may be
 20 made in any suitable manner, and therefore
 it is unnecessary to show or explain the same
 in detail in my present case.

In front of the registering instrument is the
 bridge i , which serves to open the slit pro-
 vided in the paper to insure the entrance of
 25 the point h^5 during the process of registering
 the sheet.

In the operation of the described register-
 ing mechanism the arms g and c' are lifted to
 their greatest elevation to allow the incom-
 30 ing sheet to be moved freely to the gage E,
 to which it is carried by the tapes $a a$. Said
 gage at that time is in its nearest position to
 the folding-rollers and arrests said movement
 of the sheet. The aforesaid lifting of the two
 35 arms is effected by the rock-arm A' pressing
 with its lug A^2 upon the lug c^2 of the arms c'
 and causing the lug c^2 to press upon the lug
 g' of the drop roller-arm g . As soon as the
 sheet has been arrested by the gage E the lat-
 40 ter recedes and the rock-arm A' is actuated
 to allow both arms g and c' to descend. This
 causes the drop-roller L to press the sheet into
 frictional contact with the bed F and at the
 same time the bottom of the point h^5 is caused
 45 to press upon the sheet in front of the bridge i .
 The aforesaid frictional hold of the bed F on
 the sheet imparts a secondary advance move-
 ment to the sheet, whereby the slitted por-
 tion of the sheet is drawn off the bridge i ,
 50 which serves to open the slit, so as to allow the
 registering-point h^5 to readily enter the slit.
 The edge of the slit coming in contact with
 the lower end of the lever h^4 tilts said lever,
 and thereby brings the terminal h^8 in contact
 55 with the terminal h^9 . Thus the circuit is
 closed, and the magnet K is caused to attract
 the armature f^2 and move the lever f suffi-
 ciently to lift the drop-roller arm g by the
 pressure of the lug f' upon the lug g' . The
 60 friction-bed is thereby deprived of its hold
 upon the sheet and leaves the sheet in its reg-

istered position. The rock-arm A' is then ac-
 tuated sufficiently by the cam D^2 to lift the
 arm c' , so as to cause the point h^5 to lift the
 portion of the sheet hanging on said point. 65
 This allows the folding-rollers B B to draw
 the sheet into the bite of said rollers without
 danger of tearing the sheet during the travel
 of the slitted portion of the sheet across the
 bridge i . After the sheet has passed through 70
 the bite of the folding-rollers the rock-arm A'
 receives its second impulse from the cam D^2 ,
 and thereby lifts jointly the two arms c' and
 g still farther to insure free passage of the
 next incoming sheet under the registering- 75
 point h^5 and drop-roller L.

What I claim as my invention is—

1. In a paper-folding machine or analogous
 machine designed to operate on sheets of pa-
 per, the combination with a receding front 80
 gage arresting the sheet fed into the machine,
 of a paper-registering mechanism comprising
 a longitudinally-reciprocating bed operated
 by said gage and receiving upon it the sheet
 to be registered, an electromagnetically-con- 85
 trolled drop-roller pressing the sheet period-
 ically into frictional contact with said bed to
 impart a secondary advance movement to the
 sheet to carry the sheet to its registered po-
 sition, and a registering instrument provided 90
 with a pin or point entering a slit provided
 in the sheet to arrest the sheet in said po-
 sition as set forth.

2. In combination with the sheet-delivering
 tapes and a movable gage temporarily arrest- 95
 ing the movement of the sheet, a frictional
 horizontal sheet-shifting bed disposed to re-
 ceive upon it the delivered sheet and con-
 nected to the gage to move therewith, a sta-
 tionary bracket, an intermittently-operating 100
 sheet-depressor, and a registering instrument
 both supported on said bracket, and a point
 on said instrument entering into a slit in the
 sheet as set forth and shown.

3. The combination with the adjustable re- 105
 ceding gage arresting the advance movement
 of the sheet, a longitudinally-reciprocating
 bed secured longitudinally adjustable to said
 gage and receiving upon it the paper to be
 registered, an electromagnetically-controlled 110
 drop-roller pressing the sheet periodically
 into frictional contact with said bed to carry
 the sheet to its registered position, and a pa-
 per-registering instrument equipped with a
 pin or point engaging a slit provided in the 115
 sheet to arrest the sheet in its registered po-
 sition as set forth.

TALBOT C. DEXTER. [L. S.]

Witnesses:

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