

No. 621,753.

Patented Mar. 21, 1899.

N. E. FUNK.

TABLE RAISING MECHANISM FOR PAPER FEEDING MACHINES.

(Application filed Feb. 5, 1898.)

(No Model.)

2 Sheets—Sheet 1.

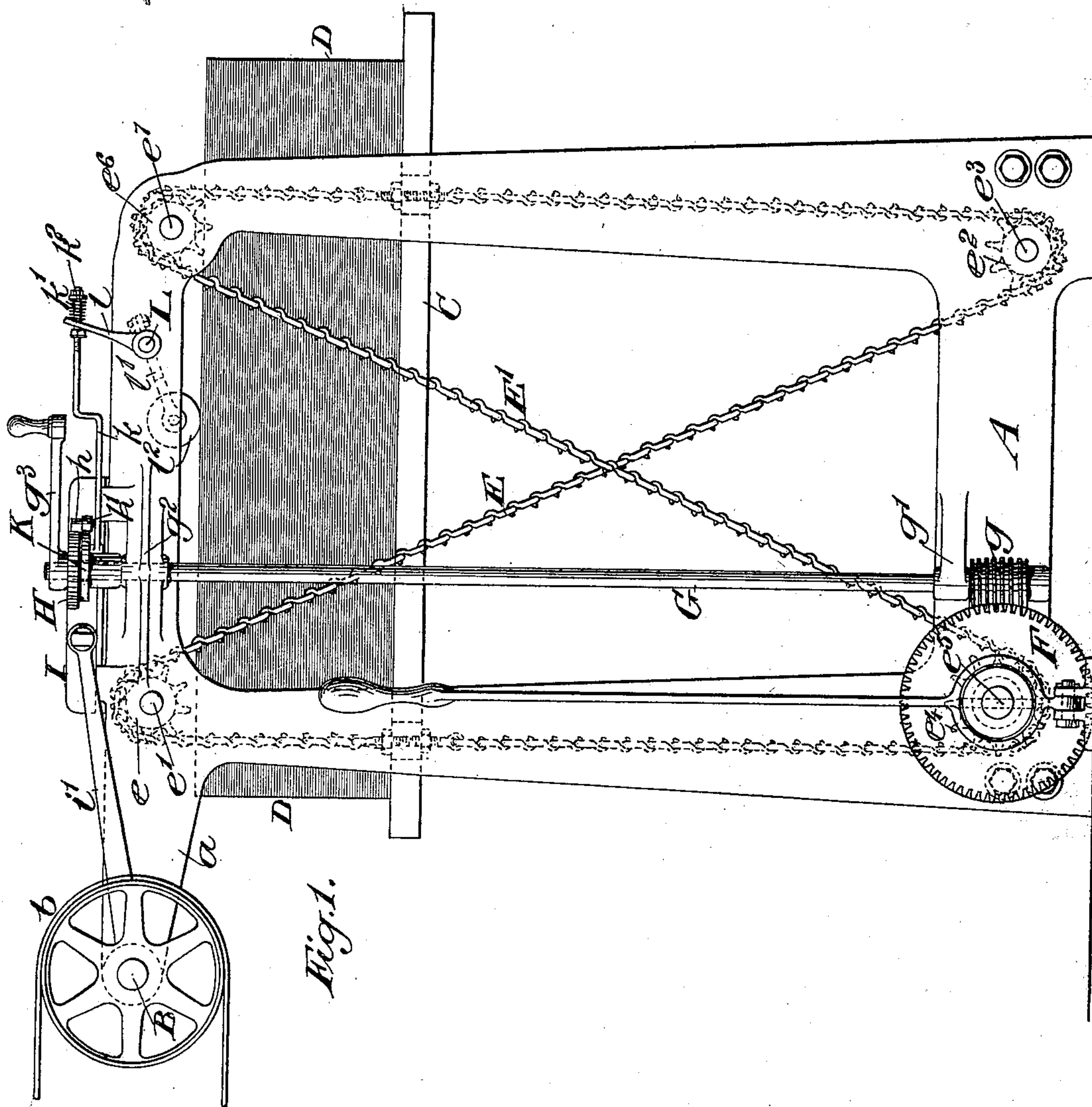


Fig. 1.

Witnesses:-
George Barry Jr.
Edward Kieser

Inventor:
Nelson C. Funk
by attorneys
Brown & Seward

No. 621,753.

Patented Mar. 21, 1899.

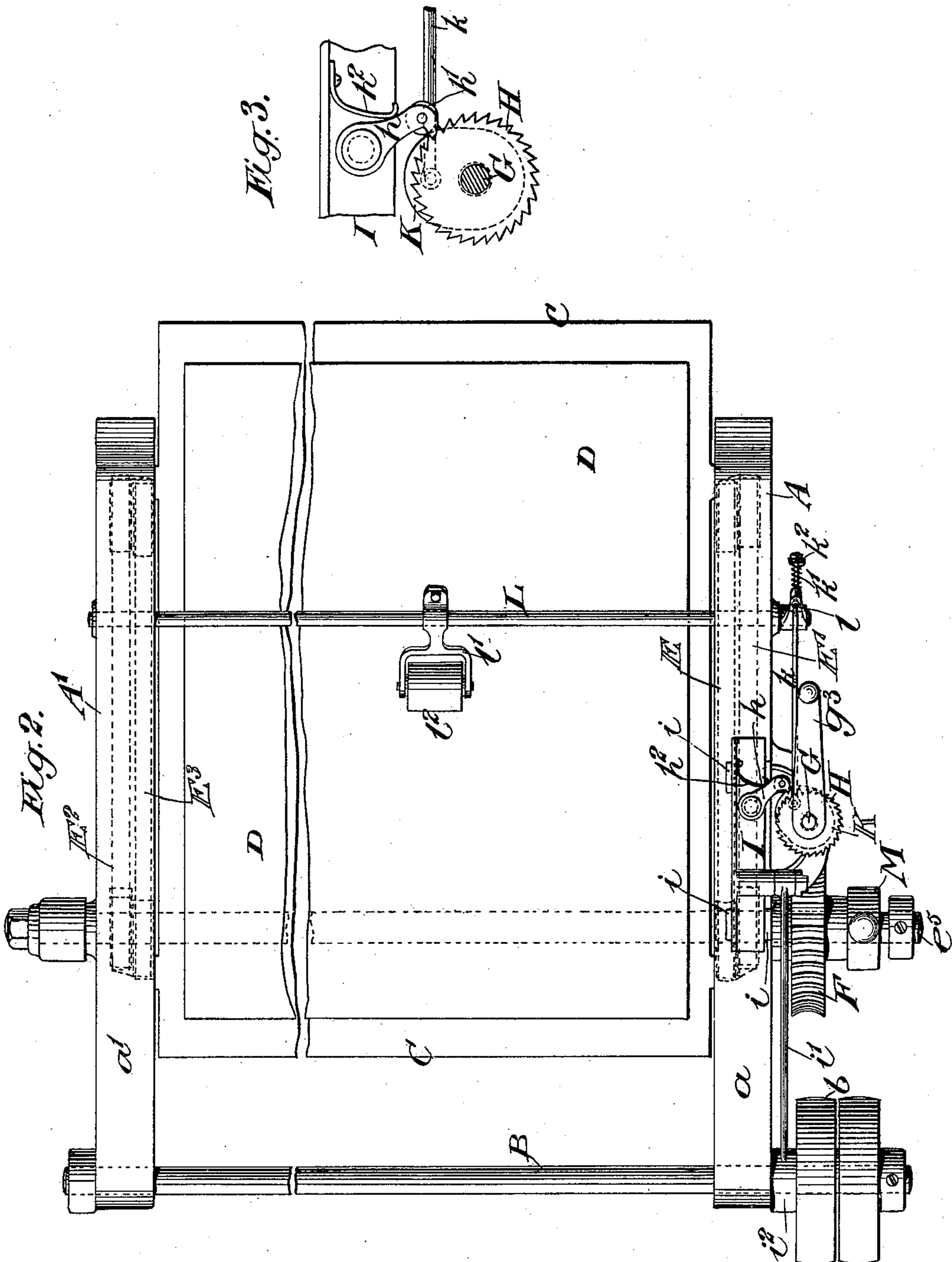
N. E. FUNK.

TABLE RAISING MECHANISM FOR PAPER FEEDING MACHINES.

(Application filed Feb. 5, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:-
George Barry Jr.
Edward Vieser

Inventor:-
Nelson E. Funk
by attorneys
Brown & Seward

UNITED STATES PATENT OFFICE.

NELSON E. FUNK, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO RUDOLPH F. EMMERICH, OF SAME PLACE.

TABLE-RAISING MECHANISM FOR PAPER-FEEDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 621,753, dated March 21, 1899.

Application filed February 5, 1898. Serial No. 669,191. (No model.)

To all whom it may concern:

Be it known that I, NELSON E. FUNK, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented a new and useful Improvement in Table-Raising Mechanism for Paper-Feeding Machines, of which the following is a specification.

My invention relates to an improvement in paper-feeding machines, and is more particularly directed to means for automatically raising the table which supports the sheets to be fed, whereby the top of the stack is kept automatically at about a certain height as the sheets are removed therefrom.

A further object is to provide a simple and effective engaging and releasing device, whereby the table is automatically raised and then held stationary until it is desired to again raise it.

In the accompanying drawings, Figure 1 is a view in side elevation of so much of the machine as is pertinent to my present invention. Fig. 2 is a top plan view of the same, and Fig. 3 is a top plan view of a portion of the engaging and disengaging mechanism.

The means for advancing the sheets of paper from the stack to any suitable machine are not shown in the accompanying drawings, as they form no part of the present invention.

The side frames of the machine are denoted by A A'. The drive-shaft B, with its drive-pulley b, is mounted in rearwardly-extended arms a a', which arms extend from the upper portions of the side frames or standards A A'. The shaft B is driven from any suitable source of power. (Not shown.)

The table C, which supports the stack of paper D, is mounted between the side frames A A', and it is positively raised and lowered by a pair of chains E E' upon one side of the machine and a second pair of chains E² E³ upon the other side of the machine. The chain E is secured to the table C at one of its ends, and thence passes upwardly over the sprocket-wheel e, mounted on a shaft e', supported in the side frame A, and from thence it passes downwardly and around a sprocket-wheel e² on a suitable shaft e³, mounted in the side frame A at its base and near its front. From thence the chain E passes upwardly

and is secured to the table C near the forward end of the table. The chain E' is secured at one end to the table C near its rear, and from thence extends downwardly around a sprocket-wheel e⁴ on a shaft e⁵, which shaft extends across the machine and is mounted in both the side frames A A'. From the sprocket-wheel e⁴ the chain E' extends diagonally upward and around a sprocket-wheel e⁶ on a shaft e⁷, mounted in the side frame A near its top and front. From thence the chain E' extends downwardly and is secured to the table C near its front. The chains E² and E³ support the opposite side of the table C in exactly the same manner as the chains E E'.

Secured to rotate with the shaft e⁵ is a gear-wheel F, which meshes with a worm g upon a vertical shaft G, which shaft is mounted in suitable bearings g' g² on the side frame A.

The shaft G is provided with a suitable crank and operating-handle g³, whereby the shaft G may be rotated in one direction or the other to rotate the shaft e⁵, and thereby raise and lower the table positively by means of its chains and sprockets hereinbefore mentioned.

The shaft G is positively rotated in one direction to raise the table by the following mechanism: A ratchet-wheel H is secured on the shaft G to rotate therewith, and a spring-actuated pawl h is mounted on a suitable slide I in such position that when the slide is reciprocated the nose of the pawl h will engage the ratchet-wheel H and positively rotate it in one direction. The slide I is mounted between suitable guides i on the top of the side frame A, and it is connected by a connecting-rod i' with an eccentric i² upon the drive-shaft B.

The mechanism for automatically engaging and disengaging the pawl h with the ratchet-wheel H is as follows: A cam K is loosely mounted upon the vertical shaft G just beneath the ratchet-wheel H, the said cam being free to turn independently of the rotation of the said shaft G. The free end of the pawl h is provided with an abutment—in the present instance an antifriction-roller h'—which abutment is adapted to be engaged by the face of the cam K, whereby as the cam is operated the pawl h will be positively dis-

engaged from the teeth of the ratchet-wheel H, the spring h^2 serving to positively cause the pawl to engage the said teeth when the cam K is operated to release it from engagement with the abutment h' . The cam K is connected with the free end of an arm l of a rock-lever L by means of a connecting-rod k . The rock-shaft L extends across the machine and is mounted in the side frames A A' near their top. The arm l is secured to rock with the shaft L, and it has a yielding connection with the rod k by means of a suitable spring k' , interposed between the free end of the arm l and an abutment k^2 on the forward end of the rod k . A depending arm l' is secured to rock with the shaft L at any desired point between the side frames A A', the free end of the said arm l' resting upon the top of the stack of paper D. In the present instance the arm l' carries a suitable antifriction-roller l^2 , which rests in contact with the top sheet of paper.

An ordinary slip-clutch M is mounted in position to release the gear-wheel F from the shaft e^5 for allowing the table C to fall by gravity without requiring the slow procedure of turning the shaft G by hand.

Proceeding to describe the operation of my invention, suppose that a stack of paper the top sheet of which is at the required height for being fed to another machine the arm l' will be raised, the rock-shaft L being thereby rocked sufficiently to swing the arm l forwardly. When the arm l is in this position, it has drawn the connecting-rod k forwardly and moved the cam K around into engagement with the abutment h' on the pawl h and has forced the said pawl out of engagement with the teeth on the ratchet-wheel H. The position of the parts, as above described, are shown in Figs. 1 and 2 of the drawings. The rotation of the drive-shaft B will because of the eccentric i^2 operate the slide I and the pawl H, but will not turn the shaft G, as the abutment on the pawl will slide along the face of the cam K without engaging the teeth on the ratchet-wheel H. As the sheets of paper are fed from the stack D the arm l' will swing downwardly and the arm l rearwardly. When a sufficient number of sheets have been fed from the stack to render it desirable to raise the table C, the arm l will have been rocked rearwardly sufficiently far to force the cam K out of engagement with the abutment h' , thereby allowing the pawl h to engage the ratchet-wheel H. Then as the drive-shaft B is rotated and the slide I reciprocated the pawl h will rotate the ratchet-wheel H and thereby the shaft G. This rotation of the shaft G will, through its worm-and-gear connection with the shaft e^5 , operate the sets of chains and thereby positively raise the table until the stack has reached a height sufficient to positively disengage the pawl h from the ratchet-wheel H.

The arm l is provided with a yielding con-

nection with the rod k for the purpose of preventing any strain upon the pawl h , as the arm l will have a slight rocking movement against the tension of the spring k^2 before it will operate the cam K, and when it does rock sufficiently to operate the said cam it will move the cam a sufficient distance to move the pawl h entirely out of engagement with its ratchet-wheel H.

By the arrangement of chains as above described it will be seen that the table C is positively raised and lowered at its front and back upon both sides, and the table is thereby kept perfectly level as it is raised and lowered.

What I claim is—

1. The combination with a drive-shaft, a table for supporting the stack of paper to be fed, table-raising mechanism and a pawl-and-ratchet connection between the table-raising mechanism and drive-shaft, of a cam loosely mounted on the table-raising mechanism, a rock-shaft having two arms one of said arms resting upon the stack of paper being fed and a connecting-rod secured at one end to the said cam and at its opposite end to the other arm of the rock-shaft, substantially as set forth.

2. The combination with the drive-shaft, a table for supporting the stack of paper to be fed, table-raising mechanism and a pawl-and-ratchet connection between the table-raising mechanism and drive-shaft, of a cam loosely mounted on the table-raising mechanism, a rock-shaft having two arms, one of said arms resting upon the stack of paper being fed and a connecting-rod secured at one end to the cam and having a yielding connection at its opposite end with the other arm of the rock-shaft, substantially as set forth.

3. In combination, a table for supporting a stack of paper, a pair of side frames, table-raising mechanism, a pair of sprocket-wheels mounted in each side frame near its top, one at its front and the other at its rear, a pair of sprocket-wheels mounted in each side frame, near its base, the one at its front and the other at its rear, a shaft extending across the machine between the two side frames for supporting the lower rear sprocket-wheel on each side of the machine, a pair of sprocket-chains located upon each side of the machine passing around said sprockets and connected at their ends to the table near its front and rear and means for operating the said cross-shaft for positively raising and lowering the table, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 3d day of January, 1898.

NELSON E. FUNK.

Witnesses:

FREDK. HAYNES,
C. S. SUNDGREN.