May 12, 1931. S. HALVORSEN 1,804,610

FEEDING MECHANISM

Original Filed June 5, 1924 5 Sheets-Sheet 1

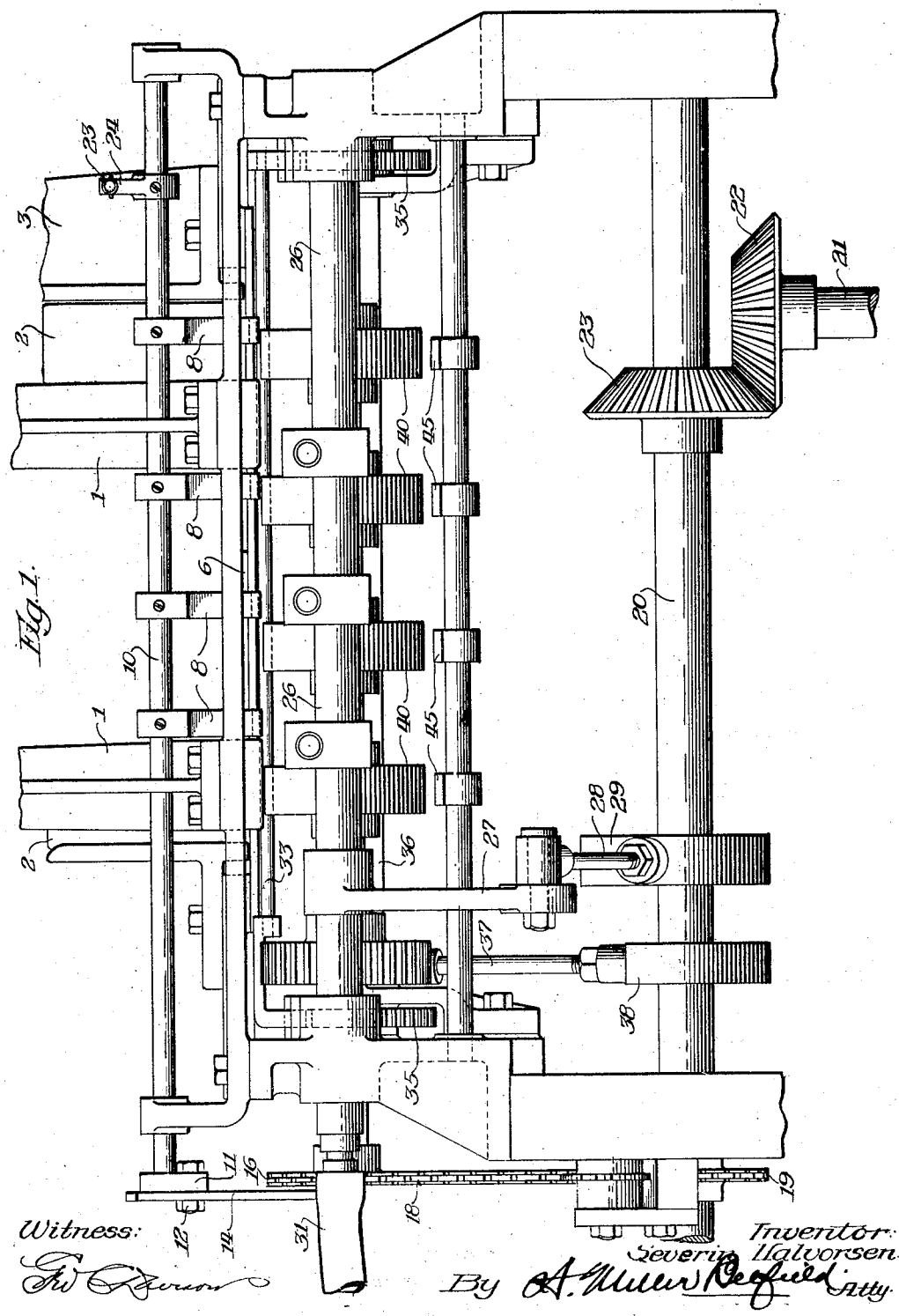


Fig. 1.

Witness:

Inventor:
Severin Halvorsen

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May 12, 1931. S. HALVORSEN 1,804,610

FEEDING MECHANISM

Original Filed June 5, 1924 5 Sheets-Sheet 2

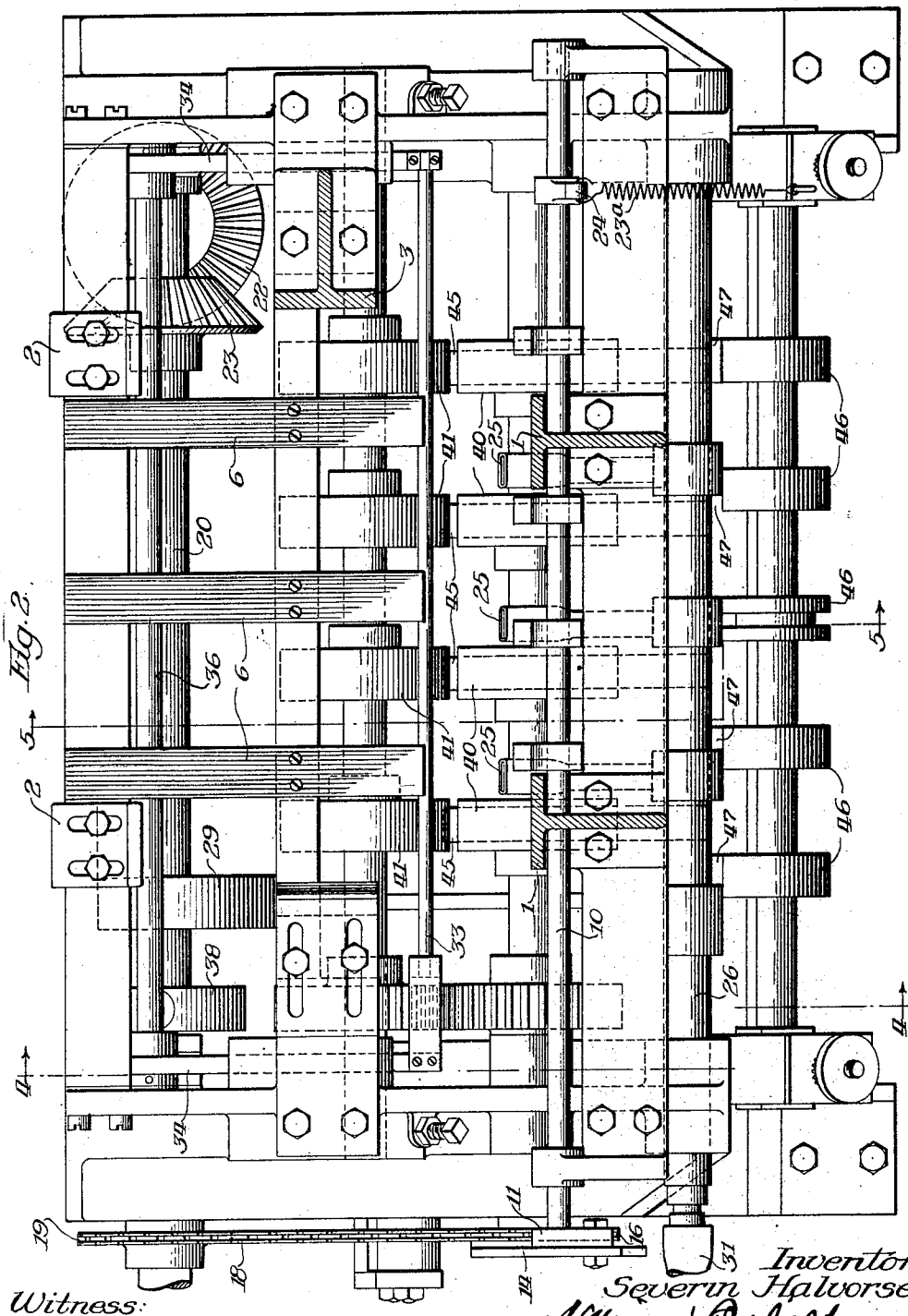


Fig. 2.

Witness:
Fred C. Dorsey

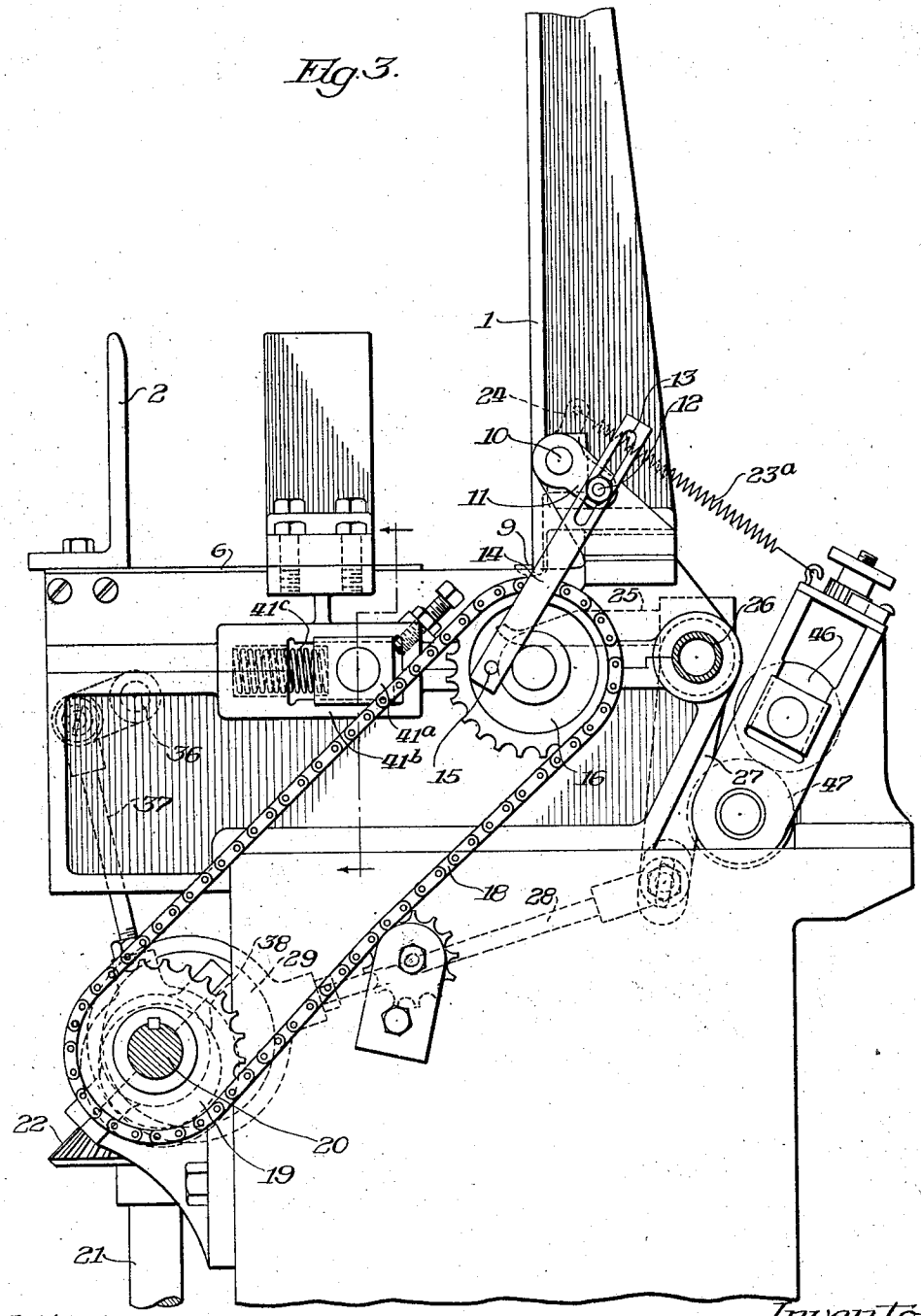
Inventor:
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May 12, 1931. S. HALVORSEN 1,804,610

FEEDING MECHANISM

Original Filed June 5, 1924 5 Sheets-Sheet 3

Fig. 3.



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May 12, 1931. S. HALVORSEN 1,804,610

FEEDING MECHANISM

Original Filed June 5, 1924 5 Sheets-Sheet 4

Fig. 4.

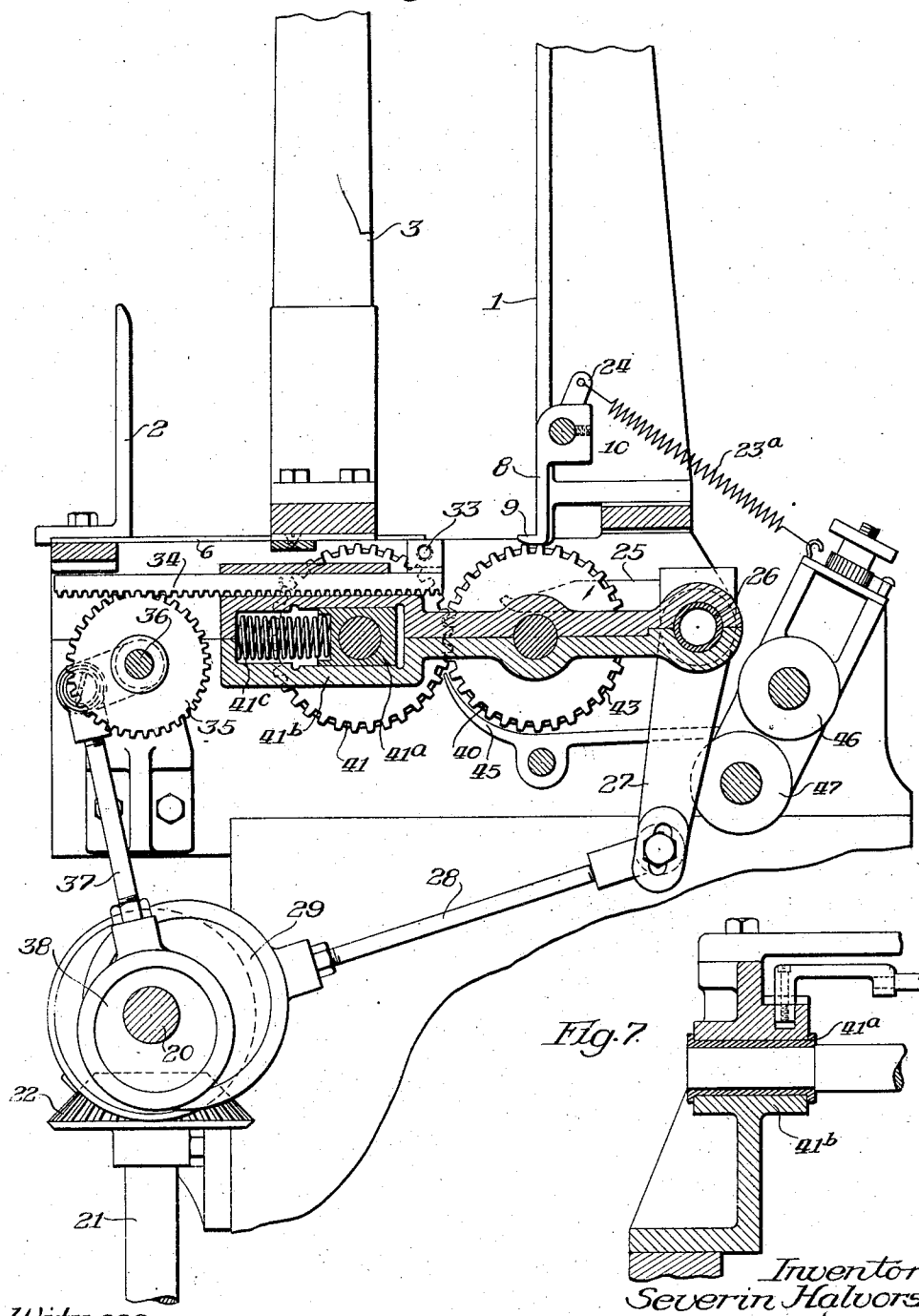


Fig. 7.

Witness

Inventor:
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May 12, 1931. S. HALVORSEN 1,804,610

FEEDING MECHANISM

Original Filed June 5, 1924 5 Sheets-Sheet 5

Fig. 5

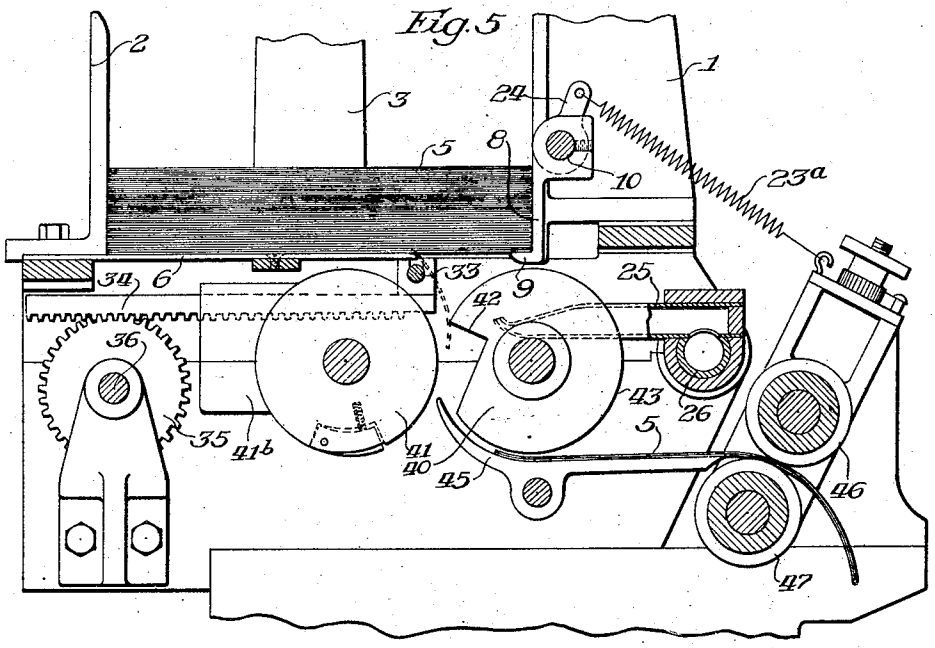
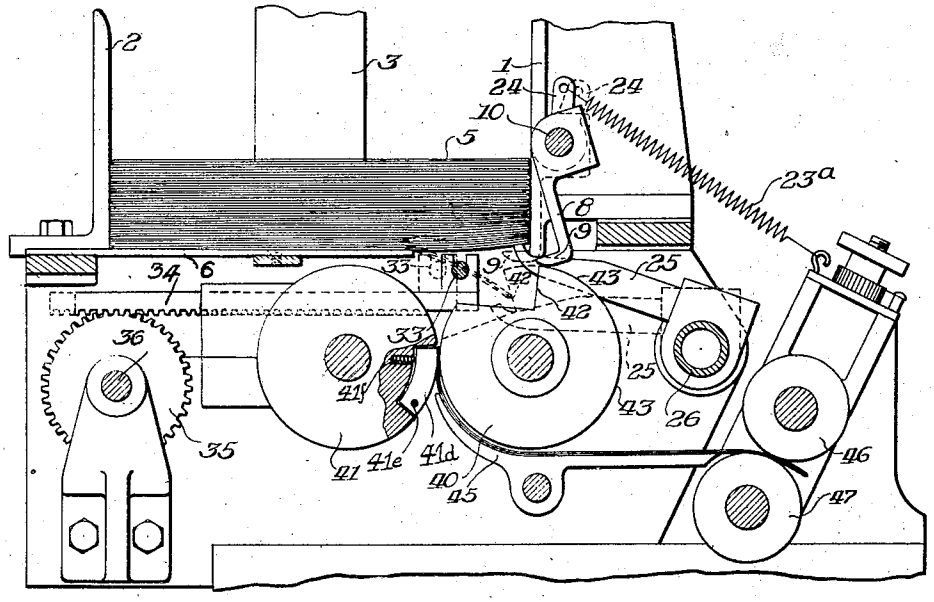


Fig. 6.



Witness:

Fred C. Dorsey

Inventor:
Severin Halvorsen

By A. Miller Redfield Atty.

Patented May 12, 1931 1,804,610

UNITED STATES PATENT OFFICE

SEVERIN HALVORSEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE NEWSPAPER STUFFING MACHINE COMPANY, OF SEATTLE, WASHINGTON, A CORPORATION OF WASHINGTON

FEEDING MECHANISM

Application filed June 5, 1924, Serial No. 718,170. Renewed May 5, 1930.

My invention relates to feed mechanisms and particularly to feed mechanisms for automatically feeding papers or paper sections from a stack in which they are piled flatwise one above another.

One of the objects of the invention is to provide a simple, practical and advantageous construction of feed mechanism, particularly of the class described.

Another object of the invention is to secure rapidity and directness of action, allowing the papers or paper sections to be fed out quickly and accurately.

Another object of the invention is to secure the foregoing and other desirable results in a simple and expeditious manner.

In the accompanying drawings Fig. 1 is a front elevation of a feeding mechanism embodying my invention;

Fig. 2 is a plan view of the same;

Fig. 3 is an end view of the machine looking toward the left hand end in Fig. 2;

Figs. 4 and 5 are cross sections taken on lines 4—4 and 5—5, respectively, in Fig. 2;

Fig. 6 is a cross section similar to Fig. 5, with the parts in different position; and

Fig. 7 is a view of a detail of construction.

Referring to the drawings I show a feeding mechanism particularly adapted for feeding newspaper sections for various purposes, as for example, for a newspaper stuffing machine.

There is shown a stack in which these sections are arranged in flatwise position in a vertical pile, as shown in Figs. 5 and 6, said stack conveniently consisting of front and back uprights 1 and 2 and side uprights 3 and 4. The newspaper sections 5—5 rest on a flat plate or base member 6, which is terminated at a short distance behind the uprights 1, so that there is a space below the front or folded edges of the newspapers 5—5, and it is through this space that said papers are fed one after another.

A plurality, preferably four, of fingers 8—8, are mounted at the front of the papers and arranged to swing back and forth so that the bent ends 9 of said fingers will come into and out of position below the forward or folded edges of said newspapers. For this purpose said fingers are preferably mounted on a rock shaft 10 which carries a crank arm 11 having a bolt or pin 12 working in a slot 13 in a reciprocating link 14 which is pivoted by a pin 15 to sprocket wheel 16. Sprocket wheel 16 is driven by sprocket chain 18 running over another sprocket 19 on rotary shaft 20, which is rotated by driving shaft 21 by means of gears 22 and 23. A spring 23*a* is connected with an arm 24 on rock shaft 10, said spring being for the purpose of swinging the fingers 8—8 so as to place their hook ends 9 underneath the stack of papers.

By this arrangement it will be seen that the link 14 will intermittently actuate the crank arm 11 and thereby rock shaft 10, and so cause the fingers 8—8 to swing outwardly and that these fingers will be swung back underneath the papers by the spring 23*a*. As a result of this arrangement the lowermost paper or paper section 5 is released, permitting it to drop and then the fingers will be retracted and will fit in above the depressed bottom paper, permitting it to be withdrawn and below the other paper sections, causing them to be held in position.

A plurality of swinging pneumatic pullers or suckers 25—25 are arranged at the front of the stack and in position to engage the lowermost paper section and draw the same down after it has been released by the fingers 8. To such end the suckers 25 are mounted on a tubular shaft 26 which is rocked by an arm 27 pivotally connected with a link 28 actuated by an eccentric 29 on rotary shaft 20. Tubular shaft 26 is connected as by a hose 31 with suitable air pressure reducing apparatus, so that suction or an air pressure reduced condition is created in suckers 25.

A supporting bar 33 is arranged below the stack of papers and mounted for horizontal reciprocation so as to afford a partial support for the lowermost paper or paper section when the same is in elevated position, said bar 33 permitting said lowermost paper section to swing downwardly when said bar is withdrawn rearwardly, whereby an automatic movable support is provided for the lowermost paper section automatically accommodating the downward swinging movement of

the same. The horizontal reciprocating motion of bar 33 is conveniently accomplished by means of a reciprocating rock 34 which is actuated by a gear 35 on rock shaft 36 which is rocked by link 37 controlled by eccentric 38 on shaft 20. By this arrangement the reciprocating supporting bar 33 will be moved back and forth for the purposes above specified.

Means are also provided for engaging and withdrawing the bottom paper or paper section, after the same has been released by fingers 8 and drawn downwardly by suckers 25. This means preferably comprises a rotary segment 40 cooperating with a rotary disk or wheel 41, the segment 40 having a shoulder 42 adapted to engage the end of the lowermost paper section as it drops from the pile or stack, as shown in Fig. 6, and to force the same to roll 41 and cause it to be gripped between the surface 43 of segment 40 and surface of roll 41, whereby said lowermost paper section is automatically pulled down over and around backwardly moving bar 33 and withdrawn from the stack or pile.

As a preferred arrangement roll 41 is mounted on a sliding bearing 41*a* enclosed in a guideway or housing 41*b*, and subject to pressure of a spring 41*c* tending to push said roll toward the segment 40 and thereby forming a tight but elastic grip on the paper section. The paper section when so withdrawn is forced downwardly and delivered in any desired manner, as for example, by sliding it along a supporting slide 45 arranged below segment 40.

It will be understood that because the loose piece 41*d* is pivoted at a point of its extent which first contacts the associated member 40, that it will act to grip the paper as though it were integral with the member 41 insofar as it will not yield; but as the point of tangency between it and the member 40 progresses toward the opposite end of the said loose piece or block 41*d*, the spring 41*f* will operate to lessen the pressure on the paper held between these parts and the pressure or force will diminish in a varying degree, thus allowing the rolls 46 and 47 to take the paper from therebetween without danger of damage thereto.

Roll 41 is preferably provided with a loose piece 41*d*, pivoted at 41*e* and subject to a spring 41*f* tending to push it outwardly. This forms an elastic or cushion roll portion, cooperating with segment 40, which permits the end portion of the paper section to slip as it is drawn upon rolls 46 and 47, said rolls turning more rapidly than segment 40 and roll 41 so that papers may be fed out rapidly.

A pair of feeding wheels 46 and 47 are preferably provided near the end of slide 45 and paper section 5 is fed between these wheels.

Thus it will be seen that the paper or paper sections will be fed one by one out of the stack in which they are contained, the bottom paper or section being successively released by fingers 8—8 and then drawn downwardly by suckers 25 and then gripped and pulled out from the stack by segment 40—41, and that this operation continues automatically and quickly, causing a rapid and effective feed.

It will be understood that changes and modifications may be made without departing from the spirit of the invention.

What I claim is:

1. In a feeding machine a stack of flat articles, fixed means for supporting the rear portions of said articles, movable means for supporting the front portions of said articles, said means comprising swinging fingers suspended from a rock shaft for alternately supporting and releasing said articles, an oscillatable arm having pneumatic means for engaging and flexing the lowermost of said articles, and withdrawing means comprising cooperating rotary members, one of said members having a resilient portion, the other said member having a recessed portion for engaging said articles.

2. The combination of a stack for a pile of papers or paper sections, means for supporting the rear portions of said papers or sections in said stack, reciprocating fingers for supporting the front ends of the papers and intermittently releasing the lowermost paper or section, means for drawing the front end of the lowermost section downwardly when so released, withdrawing means for engaging the lower front end of the paper or section and withdrawing the same from the stack and a reciprocating member arranged below the stack for cooperating with the bottom paper section as the same is withdrawn.

3. The combination of a stack for a pile of papers or paper sections, means for supporting the rear portions of said papers or sections in said stack, reciprocating fingers for supporting the front ends of the papers and intermittently releasing the lowermost paper or section, pneumatic means for drawing the front end of the lowermost section downwardly when so released, withdrawing means for engaging the lower front end of the paper or section and withdrawing the same from the stack and a reciprocating member arranged below the stack for cooperating with the bottom paper section as the same is withdrawn.

4. The combination of a stack for a pile of papers or paper sections, means for supporting the rear portions of said papers or sections in said stack, reciprocating fingers for supporting the front ends of the papers and intermittently releasing the lowermost paper or section, pneumatic means for drawing the front end of the lowermost section

downwardly when so released, withdrawing means for engaging the lowermost front end of the paper or section and withdrawing the same from the stack and a reciprocating member arranged below the stack for cooperating with the bottom paper section as the same is withdrawn, said withdrawing means comprising a segment to engage the bottom paper or section and a roll cooperating therewith to grip the same.

5. The combination of a stack for a pile of papers or paper sections, means for supporting the rear portions of said papers or sections in said stack, reciprocating fingers for supporting the front ends of the papers and intermittently releasing the lowermost paper or section, pneumatic means for drawing the front end of the lowermost section downwardly when so released, withdrawing means for engaging the lower front end of the paper or section and withdrawing the same from the stack and a reciprocating member arranged below the stack for cooperating with the bottom paper section as the same is withdrawn, said withdrawing means comprising a segment to engage the bottom paper or section and a roll cooperating therewith to grip the same, and mechanism for actuating said fingers and for operating said pneumatic drawing means and said roll and segment and said reciprocating member.

6. In a machine of the character described, having a stack for the papers or sections, a stationary support for the rear portions of the same, means for drawing down the lowermost paper or section and means for withdrawing the same from the stack comprising a rotary segment engaging said lowermost paper, a roll cooperating with said segment arranged to grasp the sections therebetween, and means for rotating said segment and roll comprising gears on the same, a sprocket wheel carried by one of said members, a sprocket chain running over said wheel and a driving shaft carrying a second sprocket wheel driving said chain.

7. In a machine of the character described having a magazine for supporting a stack of sections of means for supporting a portion of the papers or sections in the stack and means for intermittently leaving another portion unsupported for withdrawal, means for withdrawing the lowermost paper or section from the stack and a horizontally reciprocating bar arranged below the stack and mounted for reciprocation in a plane parallel to the plane of the sections to permit cooperation with said withdrawing means.

8. In a machine of the character described having a magazine for supporting a stack of sections of means for supporting a portion of the papers or sections in the stack and means for intermittently leaving another portion unsupported for withdrawal, means for withdrawing the lowermost paper or section from the stack and a horizontally reciprocating bar arranged below the stack and mounted for reciprocation in a plane parallel to the plane of the sections to permit cooperation with said withdrawing means, and means for reciprocating said member.

9. In a machine of the character described having a magazine for supporting a stack of sections of means for supporting a portion of the papers or sections in the stack and means for intermittently leaving another portion unsupported for withdrawal, means for withdrawing the lowermost paper or section from the stack and a horizontally reciprocating bar arranged below the stack and mounted for reciprocation in a plane parallel to the plane of the sections to permit cooperation with said withdrawing means, and means for reciprocating said member, said means comprising a sliding carrier and means for reciprocating the same.

10. In a machine of the character described having a magazine for supporting a stack of sections of means for supporting a portion of the papers or sections in the stack and means for intermittently leaving another portion unsupported for withdrawal, means for withdrawing the lowermost paper or section from the stack and a horizontally reciprocating bar arranged below the stack and mounted for reciprocation in a plane parallel to the plane of the sections to permit cooperation with said withdrawing means, and means for reciprocating said member, said means comprising a sliding rack, a gear wheel cooperating with said rack, and means for rotating said gear.

11. In a machine of the character described having a magazine for supporting a stack of sections of means for supporting a portion of the papers or sections in the stack and means for intermittently leaving another portion unsupported for withdrawal, means for withdrawing the lowermost paper or section from the stack and a horizontally reciprocating bar arranged below the stack and mounted for reciprocation in a plane parallel to the plane of the sections to permit cooperating with said withdrawing means, and means for reciprocating said member, said means comprising a sliding rack, a gear wheel cooperating with said rack, and means for rotating said gear, said means comprising a link pivotally connected with an arm on the gear shaft and a driving shaft provided with an eccentric actuating said link.

12. A feeding mechanism comprising a stack for the papers or paper sections, means for supporting the rear portions of the same, but leaving the front portions intermittently unsupported to permit withdrawal, reciprocating fingers normally supporting the front ends of the papers, means for swinging said fingers to intermittently release the bottom paper or section, pneumatic feeders or suck-

ers arranged to lower the front end of the bottom paper or section, means for supporting and swinging said suckers, a reciprocating bar located below the stack and arranged to reciprocate to some extent the unsupported front ends of the papers or sections, means for reciprocating said bar, means for engaging and withdrawing the bottom paper or section from the stack after it has been preliminarily lowered, said means comprising a rotary segment and cooperating roll, and means for driving the same.

13. In a feeding mechanism, the combination of a feeding segment and cooperating roll, a yielding block pivotally connected at one end thereof to the said roll, a spring between the block and the said roll, of a pair of feed rolls cooperating with the segment and roll and provided with means for rotating same more rapidly than segment and roll rotate.

14. In a feeding mechanism of the character described, a rotating roll combined with a rotating segment arranged longitudinally with respect to each other, a pivotally connected block associated with the said roll, a spring interposed between the said block and the said roll, the said block, by virtue of its mounting, exerting a force of varying degree as the point of tangency between it and the said segment progresses in the rotation thereof.

In witness whereof, I hereunto subscribe my name this 28th day of May, A. D. 1924.

SEVERIN HALVORSEN.