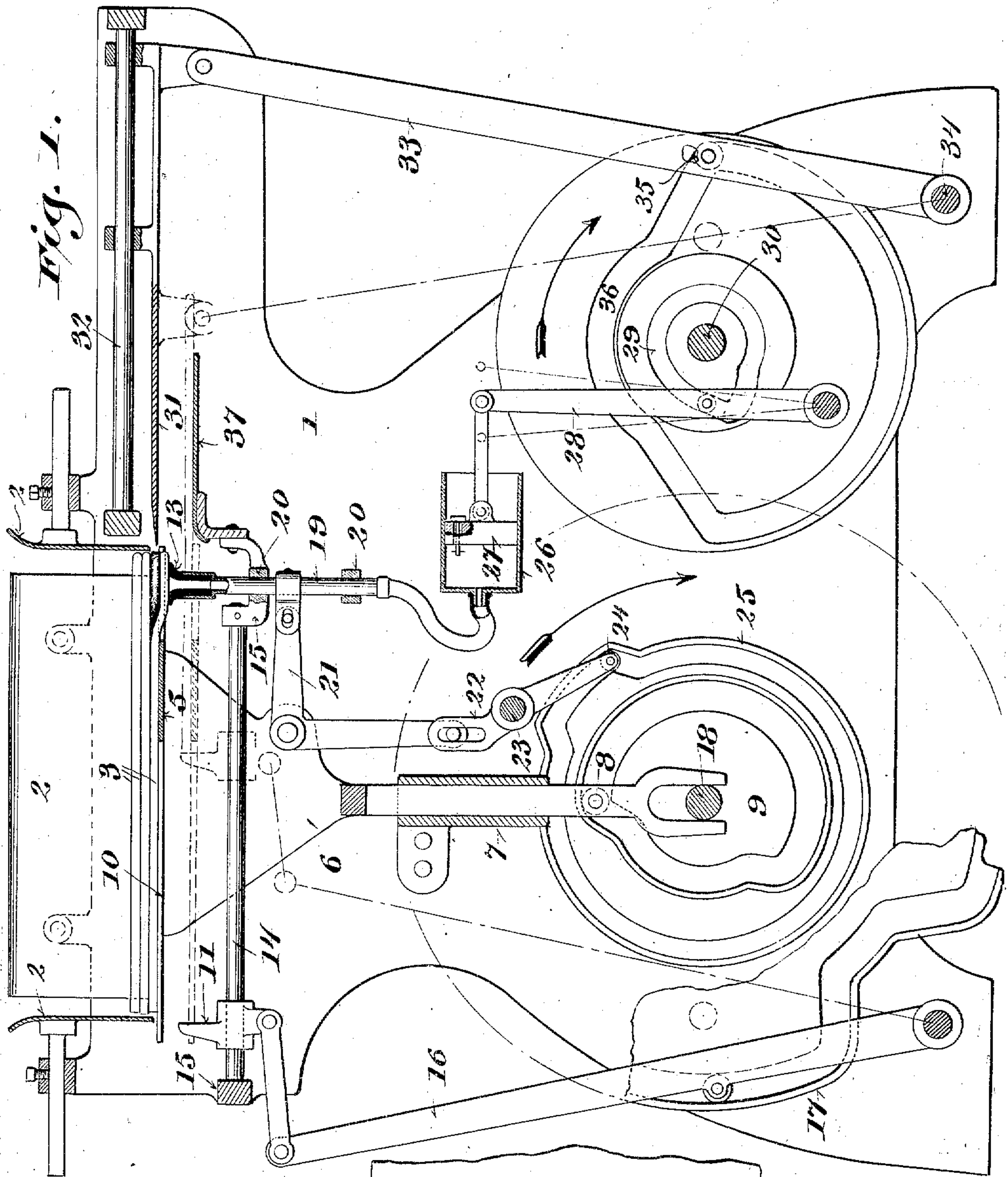


W. S. AMIDON.  
PAPER FEEDING MACHINE.  
APPLICATION FILED JUNE 13, 1910.

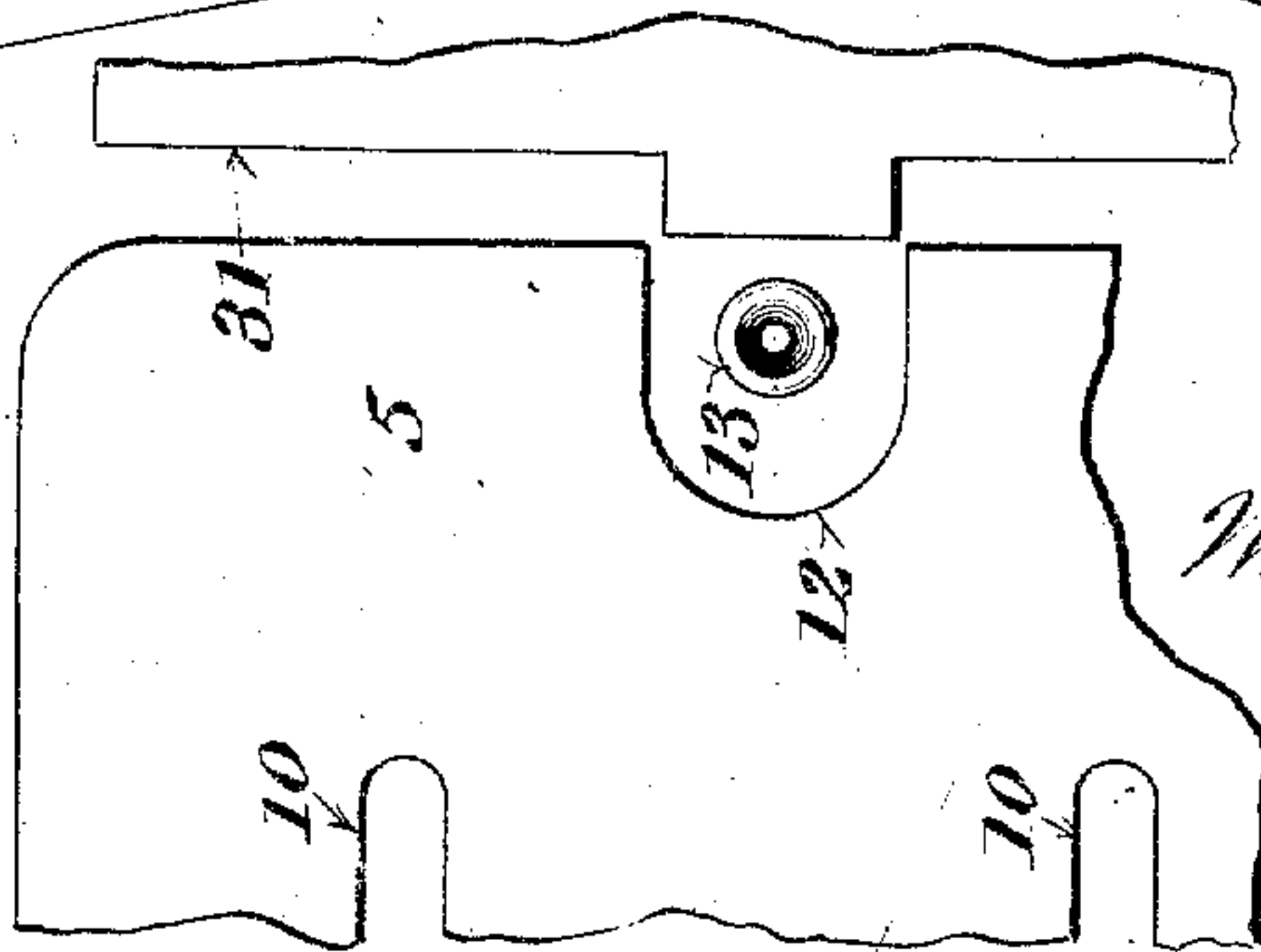
989,103.

Patented Apr. 11, 1911.



Witnesses  
George Felber  
Ralph Nelson

Fig. 2.



Inventor:  
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# UNITED STATES PATENT OFFICE.

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## PAPER-FEEDING MACHINE.

989,103.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed June 13, 1910. Serial No. 566,595.

*To all whom it may concern:*

Be it known that I, WILLIAM S. AMIDON, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Paper-Feeding Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

10 The object of my invention is to provide a simple, economical and effective feed-mechanism especially designed for feeding blank sheets or periodicals to other machines adapted to operate thereon, the construction and arrangement being such that a stack of paper-blanks or periodicals placed in a hopper may be fed as units from the bottom of the hopper, thus dispensing with various mechanical movements necessary in elevat-  
15 ing a stack of blanks when the same, as units, are fed from the top of a stack, as is usually the case in devices of this character.

The invention therefore consists in various novel structural features and combination of parts as hereinafter described with  
25 reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a longitudinal sectional view of a machine  
30 embodying the features of my invention, and Fig. 2, a detail fragmentary plan view of the hopper bottom and blank-support showing a suction-head in position thereunder.

35 Referring by numerals to the drawings, 1 indicates a frame having secured thereto adjustable side-plates 2 constituting the walls of a vertically disposed hopper, into which are dropped a stack of blanks 3, as indicated in Fig. 1 of the drawings. The  
40 blanks normally rest upon a vertically reciprocative hopper bottom 5. The bottom 5 is secured to legs 6, which legs are guided in bearings 7 that are fast to the frame, only one of the legs and bearings being  
45 shown. Each leg is provided with studs 8 that carry rollers for engagement with driven cam-wheels 9, by means of which cam-wheels the bottom is raised or lowered  
50 at a predetermined time. The said bottom 5 is provided with longitudinal slots 10 adapted to receive strippers 11 and also an edge recess 12, into which recess projects a suction-head 13, the latter together with the  
55 strippers being located directly under the

aforesaid bottom. The strippers are mounted upon and horizontally reciprocative on guide-rails 14, that are secured by brackets 15 connected to the frame 1, said strippers being in link-connection with arms 16, which  
60 arms have roller-engagement with cam-wheels 17, a portion of one of which cam-wheels only is shown, the said cam-wheels together with cam-wheels 9 being secured to a driven-shaft 18 mounted in the frame. 65

The suction-head 13 comprises a soft rubber cup mounted upon a suction-tube 19 that is adapted to be vertically reciprocated in guides 20, the upper one of which constitutes a portion of the inner bracket 15  
70 previously mentioned. Motion is imparted to the said suction-head by a bell-crank 21 in pivotal connection with the bottom supporting legs 6, one arm of the bell-crank being in loose connection with a collar secured to the suction-tube 19, while the opposite arm thereof is provided with a pin for engagement with a slot in the upper end of a lever 22. This lever is fulcrumed upon a stud 23, its lower end being provided with  
75 a roller 24 that is fitted into a cam-wheel 25 secured to the drive-shaft 18 before mentioned. The lower end of the suction-tube 19 is in hose-connection with a pump-cylinder 26, the piston 27 of which is provided  
80 with a relief-valve adapted to break the suction upon the compression stroke of said piston, which latter is also in link-connection with an arm 28. The said arm is oscillated by means of a roller secured thereto  
85 for engagement with a cam-wheel 29 fast on a drive-shaft 30, the drive-shaft being driven at the same speed and in the same direction as the before mentioned drive-shaft. 90  
95

A blank-support 31 is located just outside of the discharge end of the hopper, its lower face being approximately upon the same plane as the upper face of the bottom 5, when the same is in its elevated or normal position. The forward edge of this blank-support is beveled and has an advance tongue which acts as an entering wedge between the blanks, the said support being adapted to enter the hopper area at a predetermined time in order to support and separate the stack of blanks from the unit designed to be expelled therefrom under, which unit will then be carried down by the bottom 5 and discharged from the same 110



by the described strippers. The support 31 is mounted upon guide-rails 32 by means of apertured ear-extensions of said support, the rails constituting part of the frame and are secured thereto. Horizontal reciprocation of the support is obtained through an arm 33, the upper end of which engages the said support, while the lower end is fulcrumed upon a spindle 34 secured to the frame, there being a roller 35 secured to the arm and projecting into a grooved cam-wheel 36 fast on the drive-shaft 30 before mentioned.

Directly beneath the support, at what may be termed the discharge-end of the hopper 5, is a receiver or table 37, the said receiver being upon a plane approximately the same as that of the bottom 5, when the latter is dropped to its lowest elevation. This receiver is secured to a cross-bar of the frame and is provided for the purpose of catching the blanks as they are discharged from said bottom 5 preparatory to the entrance of said blanks in any machine (not shown) that may be arranged to receive them. In place of the receiver being in the form shown, in some instances the same may constitute a pair of feed-rollers or traveling belt-conveyers.

When the machine is in its normal position, all of the parts are in the same relation as is shown in Fig. 1, except the suction-head, the mouth of which would be upon the same approximate plane as the upper face of the bottom 5 and contacting with the lower blank or periodical. Motion being imparted to the machine will cause the pump to start on its suction-stroke, this causes the suction-head to adhere to the blank, and the said suction-head will now move down (through its cam-wheel connection) to the position assumed in Fig. 1, bringing with it that portion of the blank which bridges over the bottom recess 12. The support will now start forward, its advanced edge entering the cavity formed between the lower and next adjacent blank by the draw of the suction-head upon said lower blank. This advanced edge of the support now serves as an entering-edge for the same, the said support thereafter passes into the hopper separating the stack of blanks from the bottom one that is to be expelled therefrom. The bottom 5, through its cam-controlled means, at this junction, is caused to drop to the plane of the receiver, carrying with it the blank and suction-head, said suction-head movement being permitted through the pin-and-slot connection of its bell-crank with relation to the cam-lever. When the bottom 5 has reached its approximate downward limit, the suction stroke has been completed, and upon reversal of the piston thereof to a compression stroke the vacuum is immediately broken. Simultaneous with the release of the suction, cam-

wheel 17 acts to force the strippers forward, which strippers are now above the plane of the bottom 5 having entered the slots therein, and in their advance will expel the blank from said bottom, the said blank being delivered to the receiver.

From the foregoing it will be seen that by utilizing a movable bottom and temporary supports for the blank, and a suction mechanism, I am enabled to feed accurately one blank at a time from the bottom of a stack, thus utilizing gravity as the primary means for feeding the blank.

Having described one complete combination of well known mechanical elements for accomplishing the results desired, it is obvious that the same form no part of my invention in detail except so far as they or their equivalents are necessary in attaining the several movements.

I claim:

1. A feed-mechanism for blanks or the like comprising a hopper having a vertically reciprocative bottom thereunder, longitudinal slots in the vertically reciprocative bottom, a horizontally reciprocative stripper disposed below and alined with the slots of said reciprocative bottom, a horizontally reciprocative blank-support, the said blank-support being located adjacent one side of the hopper and upon the normal plane of the vertically reciprocative table, and a suction-head having its mouth upon the same approximate normal plane as that of the vertically reciprocative bottom.

2. A feed-mechanism for blanks or the like, comprising a hopper having a vertically reciprocative bottom thereunder, longitudinal slots in the vertically reciprocative bottom, a horizontally reciprocative stripper, the stripper being located below and alined with the slots in said bottom, and a longitudinally reciprocative blank-support adapted to enter the hopper over the aforesaid bottom.

3. A feed-mechanism for blanks or the like, comprising a hopper having a vertically reciprocative bottom thereunder, a longitudinally reciprocative blank-support arranged to travel over the bottom when the same is at its approximately highest elevation, and a longitudinally reciprocative stripper arranged to travel across the vertically reciprocative bottom when the same is at its approximate lowest elevation.

4. A feed-mechanism for blanks or the like comprising a hopper having a vertically reciprocative bottom thereunder, a longitudinally reciprocative blank-support arranged to travel across the bottom when the same is at its approximately highest elevation, and a suction-head in conjunction with the bottom.

5. A feed-mechanism for blanks or the like, comprising hopper-walls, a vertically



reciprocative bottom beneath the same, slots in the bottom, a longitudinally reciprocative stripper under said bottom and alined with the slots, a suction-head carried by the aforesaid bottom, and a longitudinally reciprocative blank-support adapted to pass under the hopper-walls and above the aforesaid reciprocative bottom in timed relation to the motion of the latter.

6. A feed-mechanism for blanks or the like, comprising hopper-walls, a vertically reciprocative bottom beneath the same, slots in the bottom, a longitudinally reciprocative stripper under said bottom and alined with the slots, a suction-head carried by the aforesaid bottom, a longitudinally reciprocative blank-support adapted to pass under the hopper-walls and above the aforesaid reciprocative bottom in timed relation to motion of the latter, and a receiver disposed to one side of the reciprocative bottom upon a lower plane than that of the longitudinally reciprocative blank-support.

7. A feed-mechanism for blanks or the like, comprising a hopper having a vertically reciprocative bottom thereunder, slots in the bottom, a longitudinally reciprocative stripper under said bottom, a vertically movable suction-head in connection with the aforesaid bottom, a pump in connection with the suction-head, driving means for

the pump in timed relation with the reciprocative motion of the bottom, and a longitudinally reciprocative blank-support adapted to pass under the hopper in timed relation with the said reciprocative motion of the bottom.

8. A feed-mechanism for blanks or the like, comprising a hopper having a vertically reciprocative bottom thereunder, slots in the bottom, a longitudinally reciprocative stripper under said bottom, an operating cam-wheel for said bottom, a suction-head in reciprocative timed relation to the aforesaid bottom, a cam-wheel in connection with the suction-head, whereby motion is imparted thereto independent of its relative timed movement with the bottom, a pump in connection with said suction-head, cam-controlled driving means for the pump, and a longitudinally reciprocative blank-support adapted to pass under the hopper, and cam-controlled driving means for the blank-support.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

WM. S. AMIDON.

Witnesses:

GEO. W. YOUNG,  
N. E. OLIPHANT.