April 30, 1935. S. HALVORSEN 1,999,292

OFFSET COUNTING DEVICE

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Fig. 1

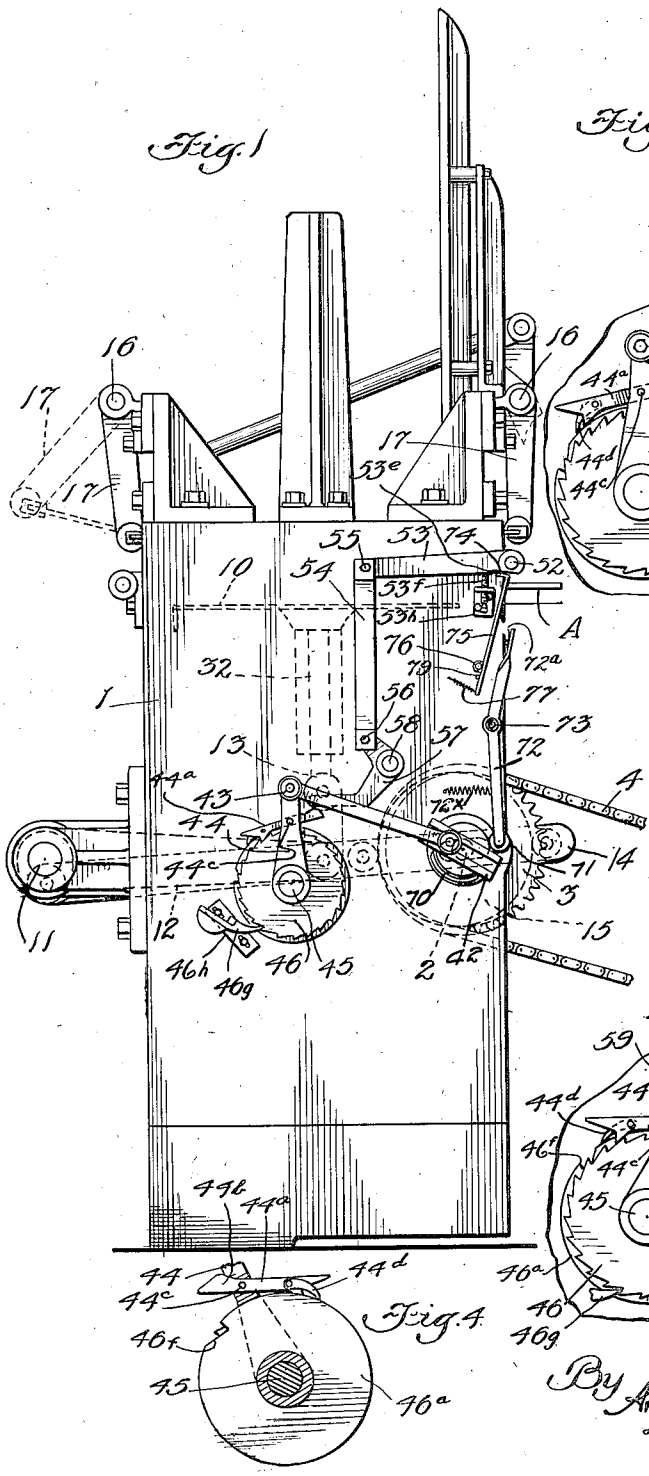


Fig. 2.

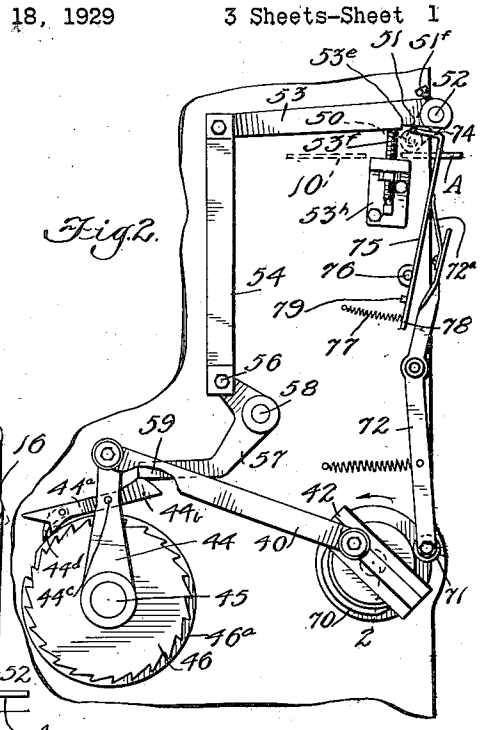


Fig. 3

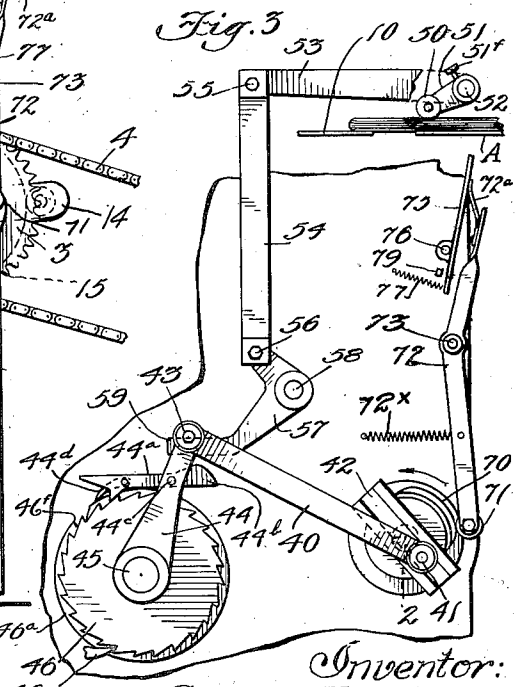


Fig. 4



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Fig. 5.

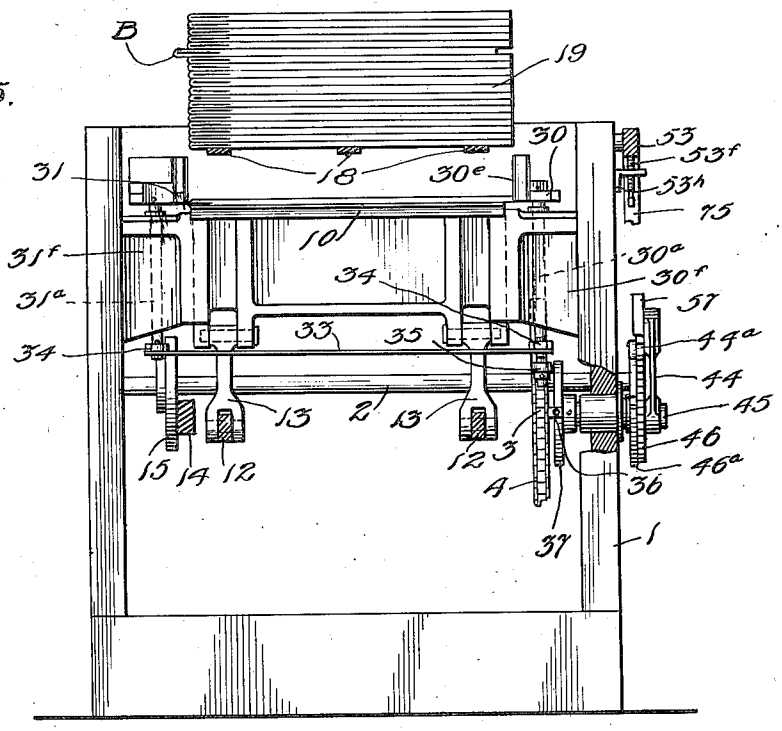



Fig. 6

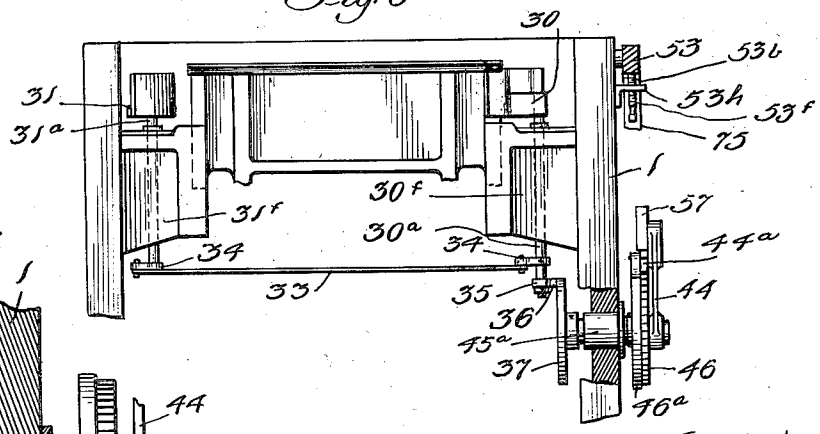
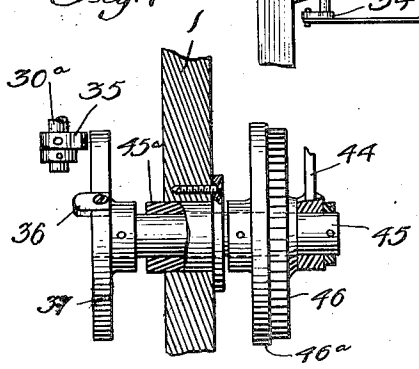



Fig. 7




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OFFSET COUNTING DEVICE

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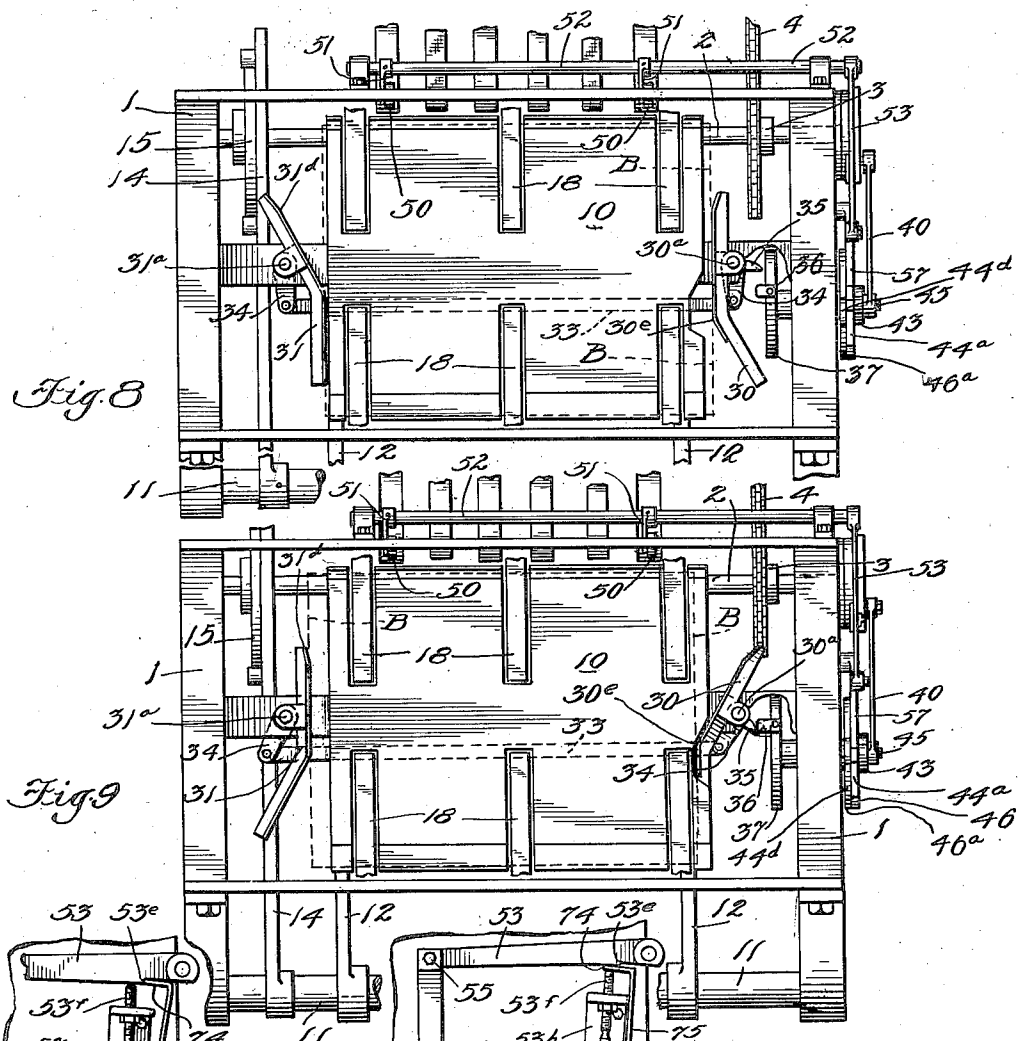


Fig. 8



Fig. 9

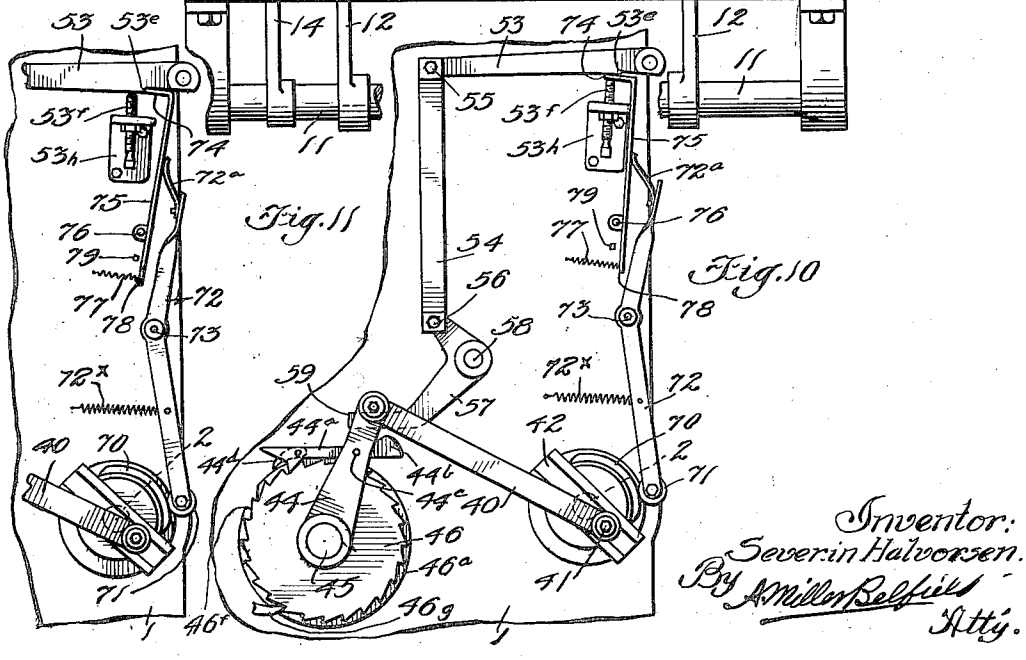


Fig. 11



Fig. 10

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Patented Apr. 30, 1935 1,999,292

# UNITED STATES PATENT OFFICE

1,999,292

## OFFSET COUNTING DEVICE

Severin Halvorsen, Chicago, Ill., assignor to The Newspaper Stuffing Machine Company, Seattle, Wash., a corporation of Washington

Application July 18, 1929, Serial No. 379,139

15 Claims. (Cl. 93—93)

This invention relates to a counting device as used more particularly in connection with newspaper stuffing machines, magazine cover binders and such like articles, where one article out of a certain predetermined number may be offset from a pile delivered to a piling or stacking device at the end of a stuffing machine; the purpose of so offsetting the one is for automatically and visually indicating the arrival of the proper number of articles to the pile at the delivery or stacking end of the machine.

One of the objects of the invention is to produce a device of this character which will be reliable in its operation.

Another object of the invention is to produce a device of this character which will not damage the articles so acted upon.

Another object of the invention is to produce a device of this character which will be interconnected with the mechanism of the delivery device of the machine, and operated thereby, but controlled by the actual presence or arrival of an article to be counted.

Another object of the invention is to produce a device of this character which will be capable of accurately counting articles of various thicknesses without making any changes or adjustments to any part or parts of the counting device.

In the drawings:

Figure 1 is a side view of the end of a machine equipped with this invention.

Fig. 2 is a detail view of the counting and associated devices.

Fig. 3 is a view similar to Fig. 2 with the parts shown in a changed position.

Fig. 4 is a detail view of a ratchet tooth wheel with its associated pawl.

Fig. 5 is an end view of the parts of the mechanism shown in Fig. 1.

Fig. 6 is a view similar to Fig. 5 but with the parts in changed position.

Fig. 7 is a detail view of the offsetting mechanism.

Fig. 8 is a plan view of the parts shown in Fig. 1.

Fig. 9 is a plan view similar to Fig. 8 but showing the parts in changed position.

Fig. 10 is a side view similar to Fig. 2 with the parts in changed position.

Fig. 11 is a view similar to Fig. 10 as to certain parts, but those shown are in changed position.

The drawings show what may be considered as being the receiving end of a newspaper stuffing machine, having the usual final transfer platform A onto which the papers are conveyed and from which they are propelled (by means not shown) to the receiving and stacking device here shown.

The side frames 1—1 support the various mechanisms including the shaft 2 which is journalled in these frame members, and has the sprocket 3 keyed thereto. A chain 4 drives the sprocket 3 and is to be understood as connected to any moving shaft of a stuffing machine (not shown).

It may be understood that at each rotation of the shaft 2 a paper unit is delivered to the platform A, thence to the stacking table where the units are stacked, and at certain predetermined intervals a unit is offset from the boundary line of the stack to mark or indicate the accumulation of a predetermined number, which in this case and for purposes of illustration is twenty-five papers, that is the twenty-fifth paper unit being offset or protruded from the general line of the other units in the stack and so facilitating the counting of the total machine output, and also enabling the operator to take from the machine a bundle containing a certain known number of units each time.

In my copending application, Serial No. 370,244, I show in detail some of the mechanisms for stacking the paper units; for instance, the vertically moving table 10 which is actuated by the rock-shaft 11 through the arms 12, the connecting links 13 and the lever 14 which is mounted for rocking the shaft 11 by the cam 15 on the shaft 2; also the rock-shafts 16—16 which carry the arms 17—17 for retracting the supporting members 18—18 which allow each incoming paper unit to be added to the bottom of the paper stack which is here indicated at 19 in Fig. 5.

The parts which are the subject of the present invention are those which offset the twenty-fifth paper unit as previously stated, and include the wings 30 and 31 and their mountings which are the vertical spindles 30ª and 31ª journalled in the brackets 30ᶠ and 31ᶠ. The spindles are interconnected for acting in unison by a tie rod 33 which is pivotally connected to short crank arms 34—34 secured to the ends of the spindles.

One of the spindles, and as here shown the spindle 30ª, has a tappet 35 keyed thereto, which is in the path of a cam 36 mounted on a rotating disk 37. Upon each revolution of the disk 37 the cam 36 encounters the tappet 35 and causes the wings 30 and 31 to move from the position shown in Fig. 8 to the position shown in Fig. 9. This movement of the wings causes the paper unit B

then resting on the table 10 to shift from the location indicated in dotted lines in Fig. 8 to the position shown in Fig. 9.

The disk 37 is mounted on and rotated by a shaft 45 journalled in a bearing box 45a; the means for rotating the shaft and thereby the disk 37 consists of a connecting rod 40 having one end mounted by means of a wrist pin 41, which is adjustably secured in a slotted crank device 42 keyed to the shaft 2. The other end of the rod 40 is pivoted at 43 to a lever 44; this lever is loosely mounted on the shaft 45 and is oscillated by the movement of the member 42. Rigidly secured to this shaft 45 is a ratchet-tooth wheel 46 (which has in this case twenty-five teeth); the lever 44 carries a pawl or ratchet 44a arranged to engage the teeth to rotate the shaft 45 to the extent of one tooth at each revolution of the shaft 2.

Thus it will be seen that at every revolution of the shaft 2 which is so related to the stuffing machine devices (not shown) that a paper unit will be added to the stack and that the shaft 45 through the medium of the ratchet and pawl will cause the cam 36 to operate the wings 30 and 31 at every twenty-fifth revolution of the shaft 2.

It is conceivable that the mechanism that delivers the paper units to the stacking device might not be loaded to full capacity and not carry a unit as expected, notwithstanding that the ratchet wheel would be advanced one tooth at every revolution of the operating shaft 2, and in the absence of provisions to the contrary the counting device would thus be thrown out of time; so to insure that the pawl 44a will not drive the wheel 46 unless a paper unit is present, there is provided the tracker wheel 50 (see Figs. 2 and 3) in the path of the units and is mounted at one end of a short lever arm 51 which is keyed to a rock shaft 52 which carries the arm 53, having the link 54 pivoted at the upper end thereof at 55, and the lower end pivoted at 56, to a bell crank lever 57 mounted on the side frame at 58.

This bell-crank lever 57 has an extension 59 which overlies the extension 44b of the pawl 44a. A paper unit, in passing over the platform A will raise the tracker roll 50 and thereby operate the members 53, 54 and 57 so that the extension 59 of the bell crank 57 will not interfere with the operation of the pawl 44a so that the wheel 46 may be rotated thereby; but when no unit is present under the roller 50, the extension 59 will contact the extension 44b of the pawl 44a and it will swing the pawl about its fulcrum 44c out of possible engagement with the teeth of the wheel 46 and the shaft 45 will remain dormant even though the shaft 2 continues to rotate and the parts will remain in that position until another paper unit arrives and restores the pawl so that it may operate the wheel 46. When the twenty-fifth paper is to be acted upon, it is desirable to increase the rotative travel of the wheel 46, and this is accomplished by mounting a second wheel 46a alongside of the ratchet wheel and supplying a secondary pawl 44d which is attached to the pawl 44a.

It will be noted that the peripheral travel of the pawl 44a is considerably in excess of the pitch of the teeth on the wheel 46, and this overtravel is utilized by so locating a notch 46f in the second wheel 46a that the pawl 44d will engage it when it arrives and will leave the wheel 46 in such position that the pawl 44a in its extreme idling travel will drop into a tooth that will cause a rotative travel equal to approximately one and one-half teeth, thus prolonging the contact between the tappet 35 and the cam 36, thereby insuring a full travel and the proper functioning of the wings 30 and 31 during the travel of the member 44. By allowing pawl 44a to fall into notch 46f to rotate 46a it can thus be easily seen that a further distance of rotation is secured than is possible with pawl 44a and ratchet 44. It may further be explained that the wing 30 is so shaped and positioned that the point 30e contacts the paper unit for shifting it in the manner described, and that the part 31d of the wing 31 acts as a limit guide for the paper so shifted. The vertical extent of these wings is calculated to be sufficient to allow them to fully shift the paper unit while the table 10 is travelling upward, a distance equal to their vertical height.

After any one of the papers has passed the tracker roller 50 and before the next succeeding one has arrived, the lever 53 in the absence of provisions to the contrary would be free to drop and cause the pawl 44a to become disengaged from the wheel 46 and the shaft 45 would then stop, with the result that in the event the cam 30 is in a position to engage the wing controlling tappet 35 the wings 30 and 31 would not travel far enough to fully offset the paper on the table 10 or complete the movement of the operated parts. To guard against this, and insure sufficient movement and complete travel of the lever 40 provision is made to hold the lever 53 in a raised position; this is accomplished by providing a cam 70 which is mounted on and operated by the shaft 2 arranged to contact a roller 71 on the lever 72. This lever is fulcrumed at 73 to the frame 1 and acts to operate a wedge 74 at the upper end of a lever arm 75 fulcrumed at 76 to the main frame 1. A retracting spring 77 is attached at 78 to the lever 75 and a stop 79 on the frame arrests the action thereof. The spring 72x retracts the lever 72.

Upon each revolution of the shaft 2 the cam 70 contacts the roller 71 on the arm 72, and thrusts the wedge 74 between the arm 53 and an adjustable stop 53f mounted in a bracket 53h, the bracket being secured to the main frame 1.

While the roller 71 dwells on the face of the cam 70, the wedge 74 will remain in the position to maintain the pawl 44a in driving relation with the wheel 46.

It will be understood that the cam 70 on the shaft 2 operates the lever 72 at every revolution thereof, and thereby tends to thrust the wedge 74 in the position above described (see Fig. 10) whether a paper is to be counted or not, and if no paper has passed the tracker roller 50, it is of course not desirable that the wheel 46 be advanced, and under these circumstances the arm 53 will not have been raised; the wedge 74 then will encounter a stop notch 53e which will limit the movement thereof; to provide for this, the lever 75 which carries the wedge 74 is yieldingly actuated by a spring 72a, so that when the parts are in the position indicated in Fig. 11 with the wedge 74 against the stop notch 53e, no harm will result to the parts.

The member 53f is made adjustable as shown, to insure the proper positioning of the lever arm 53; the member 75 is made of relatively light and ductile material to permit of its being readily formed to operate as indicated.

To accommodate for different thicknesses of paper units, the tracker roller 50 is adjustably mounted on the shaft 52, by means of a set screw 51f in the hub of the arm 51.

The pawl 46g is mounted in a bracket 46h on the frame 1, and is arranged to engage the teeth in the wheel 46 to insure its rotating in the proper direction.

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

I claim:

1. In a device of the character described, the combination of a stacking table having vertical movement, of means for offsetting units to be counted, said means mounted adjacent said table and arranged to operate during the vertical travel of the said stacking table.

2. In a device of the character described, the combination of a stacking table with offsetting means mounted on the sides thereof for counting the stacked paper units, and means for prolonging the operating period of the offsetting means.

3. In a device of the character described, the combination of a stacking table with counting and offsetting mechanism, the counting device advancing step by step, in equal increments, until the offsetting count is reached, and means for increasing that step for prolonging the operative period of the offsetting mechanism.

4. In a device of the character described, counting and offsetting means, a ratchet wheel for operating said means, said wheel arranged to rotate evenly for each unit to be counted, and means for increasing the rotative travel of the said wheel at the instant of the operation of the offsetting means.

5. In a device of the character described, counting and offsetting means, means for rendering the counting means operative, said means including a tracker roller in the path of the units and operated thereby, and supplemental means for maintaining the counting means in operative position, after the tracker roller ceases to control the said counting means.

6. In a device of the character described, counting and offsetting means, means for rendering the counting means operative, said means including a tracker roller in the path of the units and operated thereby, and supplemental means for maintaining the counting means in operative position, after the tracker roller ceases to control the said counting means, said supplemental means including a wedge and a cam, said cam adapted to intrude said wedge in position to retain the said counting means in operative position.

7. In a device of the character described, counting and offsetting means, a ratchet wheel for operating said means, an oscillating arm and a ratchet mounted thereon for driving the ratchet wheel, means for imparting equal oscillation to the said arm, and means for imparting unequal angular movement to the said ratchet wheel during the same equal oscillations of the said arm and ratchet.

8. In a device of the character described, counting and offsetting means, a ratchet wheel for operating said means, an oscillating arm and a ratchet mounted thereon for driving the ratchet wheel, means for imparting equal oscillations to the said arm, and means for imparting unequal angular movement to the said ratchet wheel during the same equal oscillations of the said arm and ratchet, said last mentioned means including a compound ratchet.

9. In a device of the character described, including a receiving platform, said platform mounted for vertical reciprocation; offsetting mechanism associated with the platform, and means for operating the offsetting mechanism during the upward travel of the said platform.

10. In a device of the character described, including a receiving platform, said platform mounted for vertical reciprocation; offsetting mechanism associated with the platform, said offsetting mechanism arranged to operate during the upward travel of the said platform, said offsetting mechanism consisting of shifting wings on opposite sides of the said platform and of such vertical height as to insure the proper functioning thereof while the platform is travelling.

11. In a device of the character described, the combination of a stacking table with counting and offsetting mechanism, the counting device advancing step by step, in equal increments, until the offsetting count is reached, and means for increasing that step for prolonging the operative period of the offsetting mechanism, said offsetting means mounted above said table and adapted to be driven from said counting device.

12. In a device of the character described, including a receiving platform, said platform mounted for vertical reciprocation, counting and offsetting means associated therewith, pawl and ratchet means for operating said counting and offsetting mechanism and means associated therewith for stopping the operation of said ratchet wheel when no unit is received on said platform.

13. In a device of the character described for counting units comprising a support for receiving units, means for feeding the units in a stack upon the support, means for counting the units, means for offsetting a unit to indicate a predetermined number of units in the stack, and means adapted to render the counting means inoperative when feeding of the units to the support is interrupted.

14. In a device of the character described, counting and offsetting means, a rotatable device for operating said means, means arranged to rotate the rotatable device evenly for each unit to be counted, and means for increasing the rotative travel of the rotatable device concomitantly with the operation of the offsetting means.

15. In a device of the character described, counting and offsetting means, means arranged to move the counting means evenly for each unit to be counted, and means for increasing the movement of the counting means concomitantly with the operation of the offsetting means.

SEVERIN HALVORSEN.