H. F. TEETSELL.

AUTOMATIC STACKER AND COUNTER FOR BOX FOLDING AND GLUING MACHINES.

APPLICATION FILED AUG. 24, 1908.

964,460. Patented July 12, 1910.

2 SHEETS—SHEET 1.

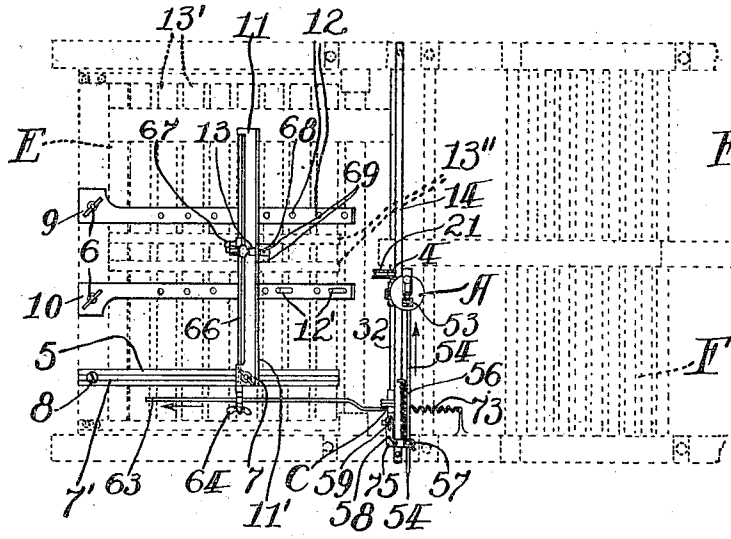

Fig. 1.

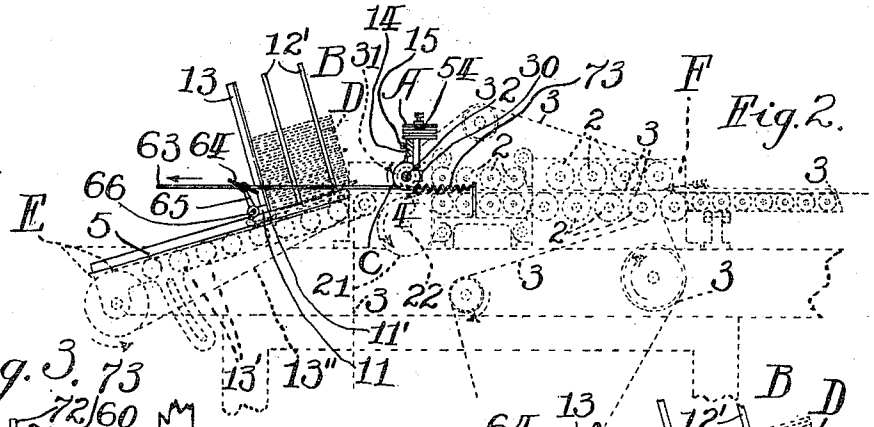

Fig. 2.

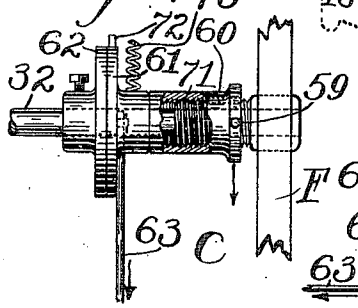

Fig. 3.

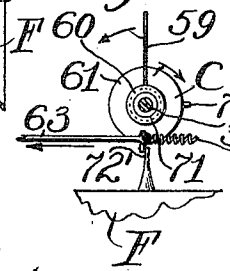

Fig. 12.

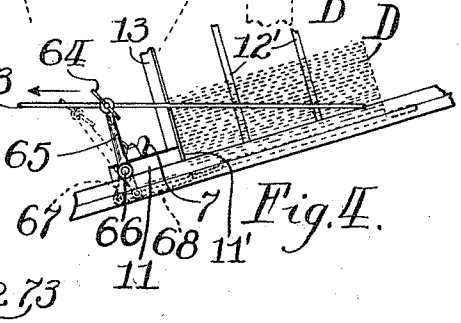

Fig. 4.

Witnesses:
H. L. Fischer.
R. A. Fischer.

Inventor:
Harry F. Teetsell,
by: F. G. Bradbury
Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

H. F. TEETSELL.

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2 SHEETS—SHEET 2.

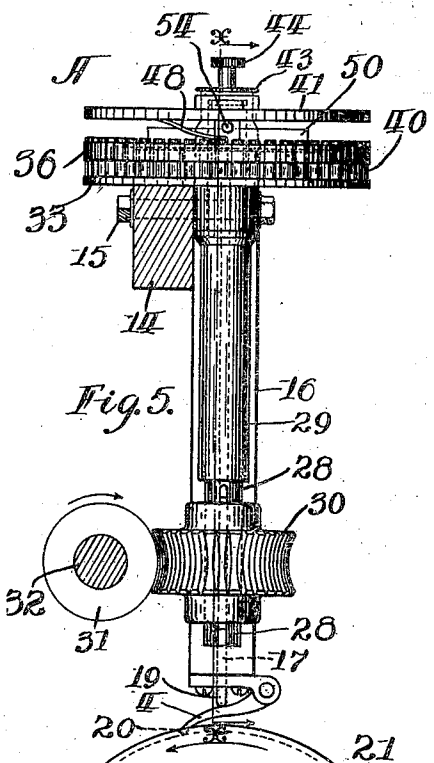


Fig. 5.

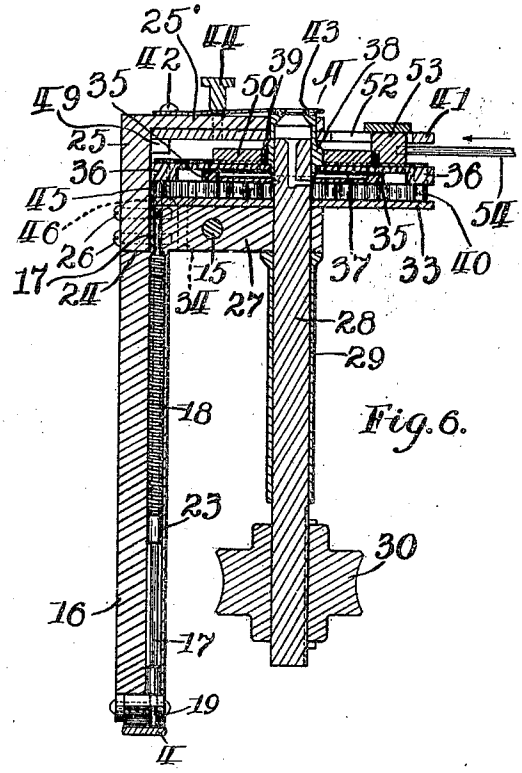


Fig. 6.

Fig. 7.

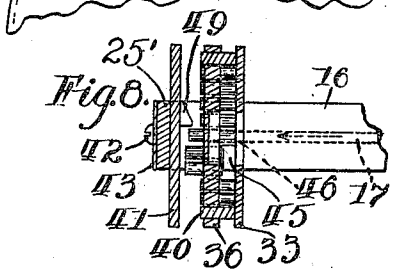
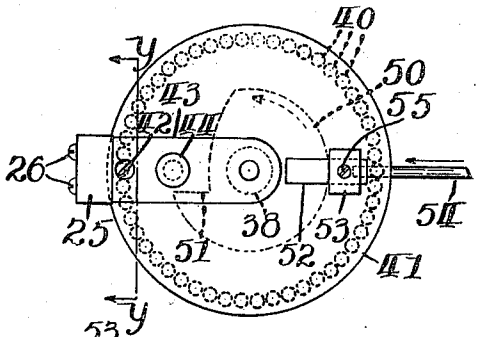


Fig. 8.



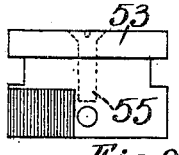


Fig. 9.

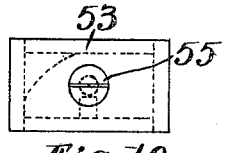


Fig. 10.

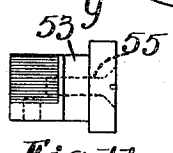


Fig. 11.

Witnesses:
H. Fischer
R. A. Fischer.

Inventor:
Harry F. Teetsell,
by: H. G. Bradbury
Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HARRY F. TEETSELL, OF ST. PAUL, MINNESOTA.

AUTOMATIC STACKER AND COUNTER FOR BOX FOLDING AND GLUING MACHINES.

964,460. Specification of Letters Patent. **Patented July 12, 1910.**

Application filed August 24, 1908. Serial No. 449,919.

To all whom it may concern:

Be it known that I, HARRY F. TEETSELL, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Automatic Stackers and Counters for Box Folding and Gluing Machines, of which the following is a specification.

This invention relates to means for stacking and bunching productions or manufactures of paper, card board, and the like in uniform pluralities as in bunches of fifties or such other number as may be predetermined, and thereby effect a mechanical counting of the pieces.

The improvements are particularly adapted for utilization in conjunction with machines for scoring, folding, gluing and delivering in collapsed and flattened position, folding boxes or cartons.

The primary object of this invention is to provide mechanism of its kind for the purposes stated which is simple, inexpensive in construction, reliable in operation, unlikely to become deranged in continuous use and susceptible of effective combination with machines of the class set forth.

To these ends, my invention comprises the combination and arrangement of parts and the construction thereof as will be hereinafter more particularly described in the specification and pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a plan of this invention showing my improved stacker and counter and a detail portion of the rear end of a folding and gluing machine in dotted outline with which my invention is adapted to coöperate; Fig. 2 is a side elevation of the stacker and counter showing the portion of the box folding and gluing machine which is illustrated in Fig. 1 by dotted outline; Fig. 3 is a plan view of a detail portion of my improved mechanism illustrating the friction clutch, part of which is shown in section; Fig. 4 is a side elevation of a detail portion of the stacker showing the finger which forces every fiftieth box forward; Fig. 5 is a side elevation of the counter showing a portion of the box folding and gluing machine in detail; Fig. 6 is a section taken on the line X—X of Fig. 5; Fig. 7 is a plan view of the counter; Fig. 8 is a sectional detail taken on the line Y—Y of Fig. 7, one of the pins being partially elevated; Figs. 9, 10 and 11 are detail views of a portion of the counter, and Fig. 12 is a side elevation of a detail portion of the machine showing the clutch.

In the drawings A represents my improved counter, B my improved stacker and F a box folding and gluing machine to which my improvements are shown attached.

In operation the folding boxes D in flat or collapsed condition are passed between the rollers 2 on the folding and gluing machine by means of the belts 3 in the direction of the arrows illustrated in Fig. 2 and toward the rear, passing in transit under the trip 4 of the counter and on to an inclined stacking table E formed by rearwardly inclined bars 9 and 10. The bars are secured to the frame of the box folding and gluing machine by means of thumb screws 6. Adjoining the table bars and lying in the same lateral plane is a guide bar 5 which is secured to the frame of the machine by means of screw 8. A transverse back supporting bar 11 is carried upon bars 9 and 10 by an adjustable connection formed by a thumb screw 7 which is adjustably secured in a longitudinal channel 7′ in the bar 5. The transverse bar 11 carries an upwardly and backwardly inclined back bar 13 and the longitudinal bars 9 and 10 are provided with holes 12 into which the rods 12′ can be inserted to limit lateral movement of the folded boxes. The box folding and gluing machine is of ordinary construction and the stacking table E is of usual form and may be swung up from inclined position as shown, into horizontal position. The table also has the usual rollers 13′ and belts 13″ for advancing the folded boxes into the stacker between the side bars 9 and 10 and against the back bar 13. Owing to the stacking table being inclined as shown, each folded box as it advances into the stacker slides below the folded box immediately above it and thus forms a stack of folded boxes from below. A transverse back plate 11′ is secured to the cross bar 11 and the back bar 13 and against which the edges of the folded boxes impinge when entering the stacker.

The counter A is fastened on the transverse supporting bar 14 of the folding and gluing machine by means of the bolt 15 and is composed of the vertical standard 16 through which a push rod 17 is passed. The rod 17 is depressed by means of a spring 18 which keeps the lower end 19 thereof pressing downward on the trip 4. This finger causes the counter to register each time a folded box passes into the stacker. Its lower end 20 rests in a groove on the surface of the wheel 21 which is mounted on a revolving shaft 22 of the folding and gluing machine, (see Fig. 2). The wheel 21 acts as a stop to limit the downward movement of the trip 4 and as a guide for said finger to prevent lateral movement. It also causes even operation of the trip each time a flat box raises it. A collar 23 on the rod 17 serves to hold the spring 18 under tension. The standard 16 is recessed at 24 to receive a rectangular block 25 which is fastened to the standard by means of the screws 26 (see Figs. 6 and 7). The top of the vertical standard 16 has a horizontal projection 27 through which is passed a vertical shaft 28. This shaft is partially inclosed by a sleeve 29 which depends from the projection 27. On the lower end of the shaft 28 is keyed a worm gear 30 which is driven by a corresponding worm gear 31 secured to a transverse driven shaft 32 of the folding and gluing machine so as to revolve the standard 28 continuously. Fastened to the top of the projection 27 by means of a screw 34 is a supporting table in the form of a disk 33. The upper end of the shaft 28 extends through this table and carries a smaller disk 35 which is keyed to it and spaced from the table. Another disk 36 is placed above the disk 35 and is loosely journaled on a collar 38 which in turn is loosely journaled on the upper end of the shaft 28 (see Fig. 6). Interposed between the upper surface of the disk 35 and the inner surface of the disk 36 is a fiber washer 37 which is attached to the latter disk to reduce wear between the rubbing parts. Arranged in a circle and passing loosely through the outer edge of the disk 36 are fifty vertical pins 40 which rest upon the table 33 and are all of uniform size and shape.

Parallel to the disk 36 is another disk 41 which is fastened to the lower face of the horizontal projection 25′ of the rectangular block 25 by means of a screw 42. This screw 42 secures on the upper face of the block 25 a bar spring 43 which presses down on the collar 38, its pressure being regulated by means of a thumb screw 44. The collar 38 has a shoulder 39 resting on the disk 36 which contains the pins 40. There is, however, a small block 45 (see Fig. 8) placed in the path of the pins 40 on the surface of the table 33 which prevents the disk 36 from revolving until the pins 40 are raised one at a time over the block 45 by means of the rod 17.

When the machine is in operation and the boxes pass one at a time under the trip 4, each box raises said trip which in turn raises the rod 17. This rod then passes through a hole 46 in the table 33 and forces the pin which happens to be immediately above it, up and the pin which is raised is pushed over onto the top of the block 45 leaving the next pin in position to be forced up and over the block in the same manner when another box passes under the trip 4. Thus each time a box passes under the trip 4, one of the pins is raised and as there are fifty pins in the disk 36, fifty boxes must pass under the trip 4 to make the disk 36 revolve once. To insure that the pins 40 shall not remain in superior position, guides 48 and 49 are provided on the lower surface of the disk 41. Thus it is impossible for them to remain elevated from the surface of the table 33 and it is also impossible for them to pass over the block 35 without being raised by the rod 17 and trip 4.

On the upper surface of the disk 36 is fastened a disk 50 which is notched at 51. The disk 41 has a slot 52 in which the block 53 slides. This block is made in two parts so that it can be removed, the parts being held together by means of a screw 55 as shown in Figs. 9, 10 and 11. To the block 53 is fastened a rod 54 which by means of a spring 56 (see Fig. 1) presses the block 53 against the edge of the disk 50. The rod 54 is fastened to the offset arm 75 near its outer end by means of a thumb screw 57. The arm 75 is pivoted to the frame of the machine at 58 and one of its ends is slotted to receive one end of the rod 59, the other end being fastened in the friction collar 60 on the shaft 32. When the rod 59 is moved in the direction of the arrow (see Fig. 3), it turns the threaded collar 60 on the threaded stud 71 which is stationary (see Fig. 3) on the shaft 32 its outer end being held stationary by the frame of the machine.

61 represents a driven friction collar which is carried loosely upon the shaft 32 and adapted to be impinged against a drive collar on said shaft. This drive collar turns it in the direction of the revolving shaft 32 until a stop 72′ on the loose friction element 61 comes into contact with a corresponding stationary stop on the machine. To the loose friction element 61 is pivoted a rod 63 which extends and is fastened by a thumb screw 64 to a crank arm 65. This crank arm 65 is fastened to the shaft 66 on the stacker. Centrally between the ends of the shaft 66 is fastened a crank arm 67 which is pivoted to a stop 68 sliding between two guides 69 (see Fig. 1). Thus when the rod 63 is forced back in the direction of the arrows,

the crank arm 67 forces the stop 68 forward holding one box forward so that it projects a little beyond the stack D. Each time the disk 50 revolves, the block 53 slips into the notch 51 and the rod 54 throws the friction clutch into action and the rod 63 turns the shaft 66, the stop 68 forcing one box forward and thus bunching the boxes in fifties or in the same number corresponding with that of the pins in the disk 36. A spring 73 is connected to the frame of the machine and the driven element 61 of the clutch to withdraw the stop 68 from the stack.

In operation the folded boxes are advanced by the belts 3 between wheels 2 and wheels 13′ and belts 13″ into the stacker. In transit they pass over the wheel 21 and each box presses the trip 4 up. The shaft 28 is revolved continuously, receiving power from the machine by means of the worm gearing 30 and 31. Each time the trip 4 is pressed up a pin 40 is raised by the plunger 17 and the notched disk 50 permitted to turn a step forward, the friction between disk 35 and the washer 37 on disk 36 being continuous repeats this operation until all of the pins have been raised. Upon each complete revolution of the notched disk 50 in the direction of the arrow in Fig. 7 the block 53 is pressed by spring 56 into the notch 51 in the disk 50, whereupon the bell crank lever 75 causes the clutch C to be closed and the driven element 61 thereof turned causing the stop 68 to hold the fiftieth box in the stack in advance of the others above it. The next box passing into the stacker after the stop 68 has advanced the lowermost box therein, sweeps against the trip 4 and allows the disk 41 to revolve forward a step thus causing the notched disk to revolve sufficiently to release the driving and driven clutch elements and permit the spring 73 to cause the stop 68 to be withdrawn from the stack of boxes, the notch or cam surface 51 on the disk 50 being shaped so as to press the block 53 outward.

In accordance with the patent statutes I have described the principles of operation of my invention together with apparatus which I now consider to represent the best embodiment thereof but I desire to have it understood that the construction shown is only illustrative and that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claims.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In a machine of the class set forth, means for stacking and bunching productions of manufacture such as folded boxes, comprising, a stacker adapted to receive folded boxes into its lower end, means for passing said boxes into said stacker, a device for holding one of a predetermined number of boxes in advance of a stack above it, a clutch having its driven element operatively connected with said device to move it into advanced and receded positions, a counter also associated with said clutch, and a trip sweeping in the path of a series of moving boxes and adapted to operate the counter each time a box impinges against it.

2. In a machine for stacking and bunching folded boxes or other productions of manufacture in uniform pluralities, the combination with actuating mechanism, of a stacker into which a series of boxes is adapted to pass and form a stack from below, a counter revolubly connected with said actuating mechanism, a trip sweeping in the path of the boxes, means connected with said trip and adapted to allow the counter to turn forward a step each time the trip is moved by a box, a clutch connected with said actuating mechanism having driving and driven elements, means connected with said counter for throwing the clutch into operation each time said counter has been actuated a predetermined number of times by said trip, a device associated with said stacker for holding one of the boxes in advance of the stack above it and a connection between said device and the driven element of said clutch.

3. In a machine for stacking and bunching productions of manufacture such as folded boxes in uniform pluralities, a stacker adapted to receive folded boxes into its lower end, means for passing said boxes into said stacker, a device for holding one of a predetermined number of boxes in advance of a stack above it, a clutch having its driven element operatively connected with said device to move it into advanced position, means for returning said device into receded position, a counter associated with said clutch, a trip sweeping in the path of the moving boxes and adapted to operate the counter each time a box impinges against it, means connected with said counter and clutch for operating the latter each time the counter trips a predetermined number of times to throw said clutch into operation and advance said device, and actuating mechanism.

4. In a machine of the class set forth, means for stacking and bunching productions of manufacture such as folded boxes, comprising, a stacker adapted to receive folded boxes into its lower end to form an upright stack, means for passing said boxes substantially horizontally and in series into said stacker, a device for holding one of the boxes substantially horizontally in the stack and in advance of those above it, a trip sweeping in the path of the series of moving boxes and clutch mechanism associated with said trip and device for moving the latter

into advanced position each time a predetermined number of boxes are stacked above the advanced box and for automatically withdrawing said device so that the following boxes will form a stack in receded position, and suitable actuating mechanism.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HARRY F. TEETSELL.

Witnesses:
R. A. FISCHER,
H. L. FISCHER.