A. B. CORCORAN

FEEDING MACHINE.

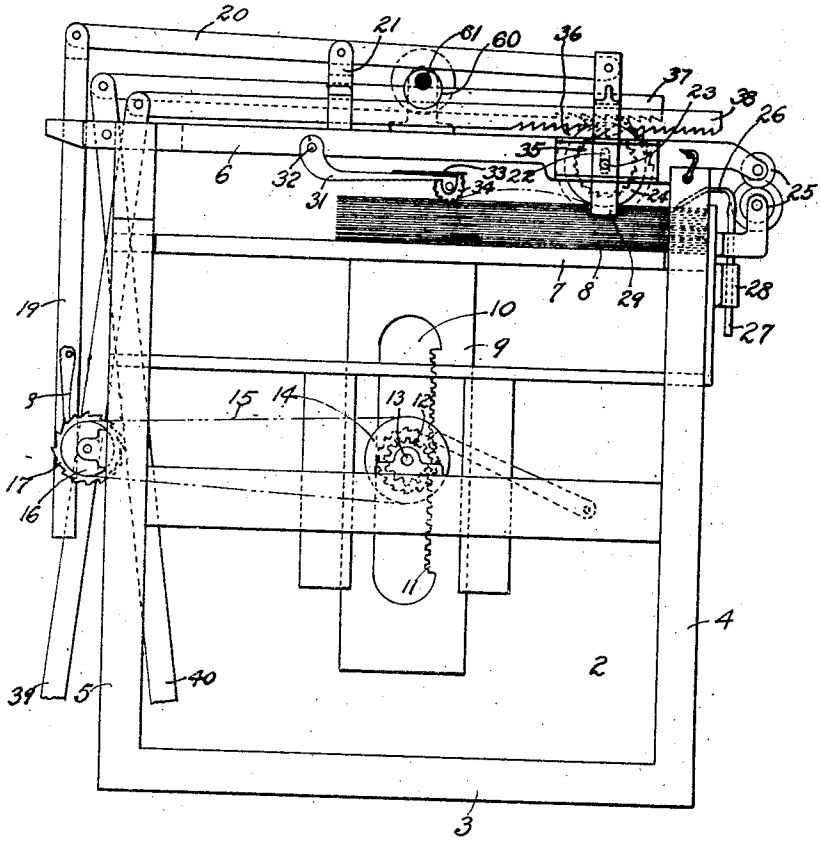
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1,364,723.

Patented Jan. 4, 1921.

2 SHEETS—SHEET 1.

Fig. 1



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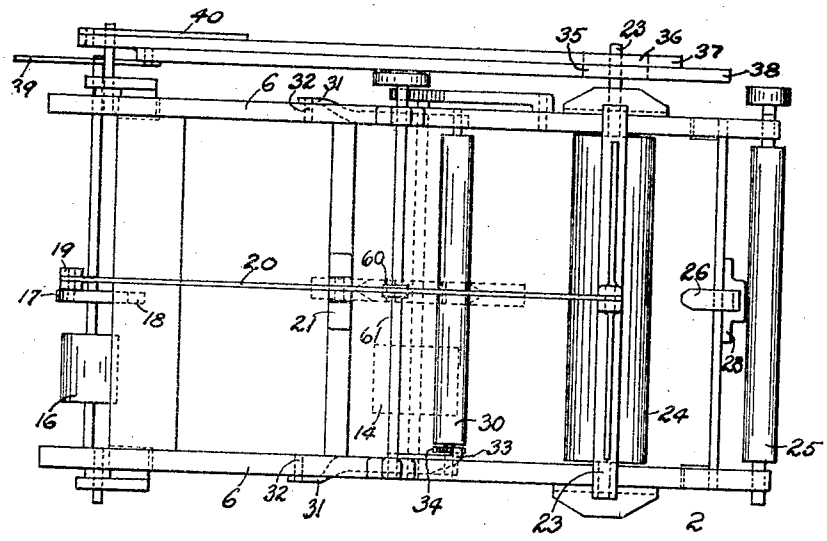
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2 SHEETS—SHEET 2.

Fig. 2



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FEEDING-MACHINE.

1,364,723. Specification of Letters Patent. Patented Jan. 4, 1921.

Application filed March 26, 1920. Serial No. 368,825.

To all whom it may concern:

Be it known that I, ALFRED B. CORCORAN, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Feeding-Machines, of which the following is a specification.

This invention relates to what shall for convenience be termed a "feeding machine." It is possible that the feeding mechanism can be used with advantage in connection with various kinds of apparatus such for instance as printing-presses and bag-forming machines which are merely two of a number of illustrations. I have several motives in view among them being the provision of means of a simple and effective nature, which is capable of inexpensive and ready construction and which will efficiently operate to present a single sheet or its equivalent from a stack or pile for subsequent treatment. In the case of a printing-press this would be the presentation of the sheets cards or envelops singly in order to receive impression from printing mechanism of whatever nature the same may be. In other devices the sheet or equivalent part, might be presented to a different kind of device.

In the drawings accompanying and forming part of the present specification I have shown in detail one of the several forms of embodiment of the invention which to enable those skilled in the art to practise the same will be set forth fully in the following description. Clearly I am not restricted to such disclosure. I may depart therefrom in several respects within the scope of the invention defined by the claims following said description.

Referring to said drawings:

Figure 1 is a side elevation and

Fig. 2 is a top plan view of a sheet feeding machine involving the invention.

Like characters refer to like parts in both views.

The various parts of the machine are sustained in some suitable manner, the frame 2 being shown for the purpose. The frame comprises a bottom or base 3, front 4 and back 5 usually composed of complemental members and of metal, wood or other suitable material. The sides of the frame, as shown are connected at their front and rear by parallel rails 6.

Within the frame 2 is mounted a suitable support the flat table 7 answering satisfactorily in this connection. This table at its front portion sustains on its upper side a stack or pile 8 of sheets of paper or something of an equivalent nature, the uppermost sheet or other article being taken off automatically as I will more fully set forth hereinafter. As the pile or stack of sheets is reduced the table is automatically fed upward in some convenient way, mechanism for this purpose shown and now to be described answering satisfactorily. From the support or table 7 there depends the tongue piece 9 slotted as at 10 one wall of the slot having rack teeth 11 to mesh with the pinion 12 on the shaft 13. The pinion in addition rigidly carries a band wheel 14 around which is passed the band 15 fitted around the rear band wheel 16 rigid with its shaft which is furnished with the ratchet wheel 17 cooperative with the pawl 18 pivoted to the carrier 19 in the form of a lever depending from the companion lever 20, fulcrumed between its ends to the bracket 21 supported by the upper side of the framework 2. As the stack of sheets is reduced in thickness, the lever 19 is pulled up, thereby imparting motion of the pawl 18 to effect the step rotation of the ratchet wheel 17 and through the parts set forth the upward feed of the support or table 7, this upward feed being as will be understood an intermittent one and being old in the art.

The rails 6 as shown have vertically elongated slots 22 to receive the gudgeons or journals 23 at the ends of the roller 24 desirably of some soft material such as rubber and which preferably is adapted to rest upon the top sheet of the stack or pile 8 as shown best in Fig. 1. This roller is automatically oppositely turned so as to first free the forward portion of the topmost sheet from a holder and then to feed the sheet thus freed to parallel feed rollers 25 supported by the frame of the machine and which in turn advance the sheet for subsequent action of whatever character this may be. In the present case the holder which engages the topmost sheet is denoted by 26 and is in the form of a bent finger extending rearwardly from the upper end of the shank 27 supported in the bracket 28 on the frame 2, the bent finger as shown in both Figs. 1 and 2 overhanging the stack or pile of sheets. In action as I will hereinafter more fully set forth and the rollers 25 playing a func-

tion in this procedure, the topmost sheet is pulled from under the holder or finger 26 and is then fed upwardly over the finger into the bite of the rollers 25.

The gudgeons of the roller 24 are supported for rotation by the strips 29 depending from the front end of the lever 20 to which I have already referred, the peripheral portion of said roller by its weight engaging the topmost sheet of the stack or pile. It will be clear that if the roller be turned in a rearward direction the forward portion of the topmost sheet will be slipped from under the free end of the spring finger 26 wholly freeing said topmost sheet from the restraining influence of the finger. On the top the sheet thus freed is fed forward and over the inclined rear end of the finger beyond which the sheet thus operated upon will be further advanced by the two rotating rollers 25.

In connection with the said material there is a suitable detent such as the roller 30 which extends entirely across the uppermost sheet of material back of the middle of the pile. The journals of this roller are supported for rotation in the rock arms 31 fastened to and extending forwardly from the rocking studs 32. One of the arms 31 carries a spring pawl 33 coöperative with the teeth of the ratchet wheel 34 fastened to one of the journals of the roller 30, the pawl and ratchet preventing accidental movement backwardly of the roller 30. This roller rests upon the uppermost sheet of the pile.

The action, and I will hereinafter explain a means of securing this result, is brought about first by the rearward movement of the roller 24 which is first turned or rotated backwardly and thus draws back the forward portion of the topmost sheet from the restraining influence of the spring finger 26 and pulls or bends said topmost sheet in the space between the rollers 24 and 30 as shown by dotted lines in Fig. 1. On the forward movement of the front or main roller 24 the topmost sheet is flattened down and fed forward and withdrawn from under the back roller 31, with its front end up over the finger 26 for a distance sufficient to cause said front end to be received between and grasped by the superposed rollers 25 which further advances the sheet for subsequent treatment by other mechanism.

The opposite motions of the main or primary roller 24 or analogous member are effected desirably but not essentially by a duplex rack and pinion mechanism. As shown one of the gudgeons of the roller 24 or the upper one in Fig. 2, has fastened to it, the pinions 35 and 36 respectively, meshing with teeth of rack bars 37 and 38 respectively the rear ends of which are jointed as by pivoting, to the rockers or rods 39 and 40 which are automatically oscillated at proper points to cause the requisite endwise movement of the respective racks and thereby opposite turning movements of the primary roller 24. When the primary roller 24 is moved rearwardly as I have already intimated, the peripheral portion thereof will sweep the front part of the topmost sheet from under the holding influence of the finger 26, bowing said sheet in the manner indicated by dotted lines in Fig. 1. On the opposite movement of the roller under the action of its rack and pinion mechanism, the sheet thus drawn back will be bodily moved forward and over the finger 26 and entirely free of the holding down roller 30.

It is proper to note that the cam 60 on the shaft 61 oscillates the arm 20 so that the necessary vibratory motion is imparted to the carrier 19 to effect through the described parts, the upward feed of the table 7. I desire also to make clear that the racks 37 and 38 are so related that when one rack is acting through the coöperating parts to move the sheet back from under the element 26, the other rack does not connect and vice versa. In addition to this the rack which moves the sheet the shortest distance backward is approximately a third the length of the rack which moves the sheet forward.

What I claim is:

1. A machine of the class described comprising a table to support a stack of articles, a finger to engage over the front end of the stack, a roller to engage the top article of the stack, pinions rigid with the roller, racks, the teeth of which face oppositely to engage the teeth of the respective pinions, a device engaging the top sheet back of said roller, and means for reciprocating the racks to cause them to effect opposite turning motions of the roller, to initially buckle the topmost sheet and drawing it from under the said finger and then to feed the sheet forwardly over the finger.

2. A machine of the class described comprising a table to support a stack of articles, a finger to engage over the front end of the stack, a roller to engage the top article of the stack, pinions rigid with the roller, racks, the teeth of which face oppositely to engage the teeth of the respective pinions, a yieldingly mounted roller engaging the top sheet back of the other roller, and means for reciprocating the racks to cause them to effect opposite turning motions of the front roller, to initially buckle the topmost sheet and draw it from under the said finger and then to feed the sheet forwardly over the finger.

In testimony whereof I affix my signature in the presence of two witnesses.

ALFRED B. CORCORAN.

Witnesses:

THOMAS J. CORCORAN,

HEATH SUTHERLAND.