

June 28, 1927.

E. A. FORD

1,633,937

CARD FEEDING APPARATUS

Filed Aug. 13, 1925

2 Sheets-Sheet 1

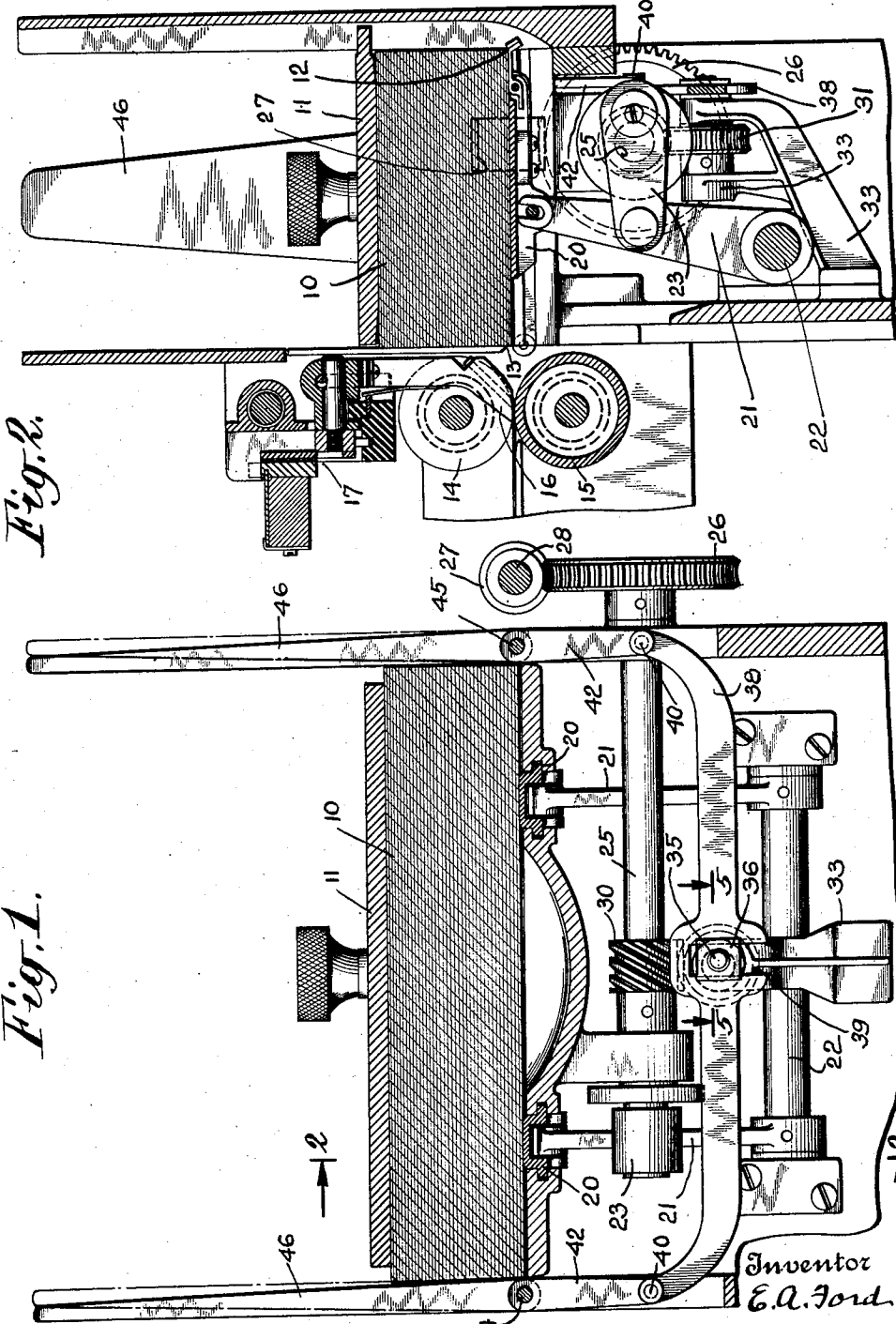


Fig. 2.

Fig. 1.

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Fig. 3.

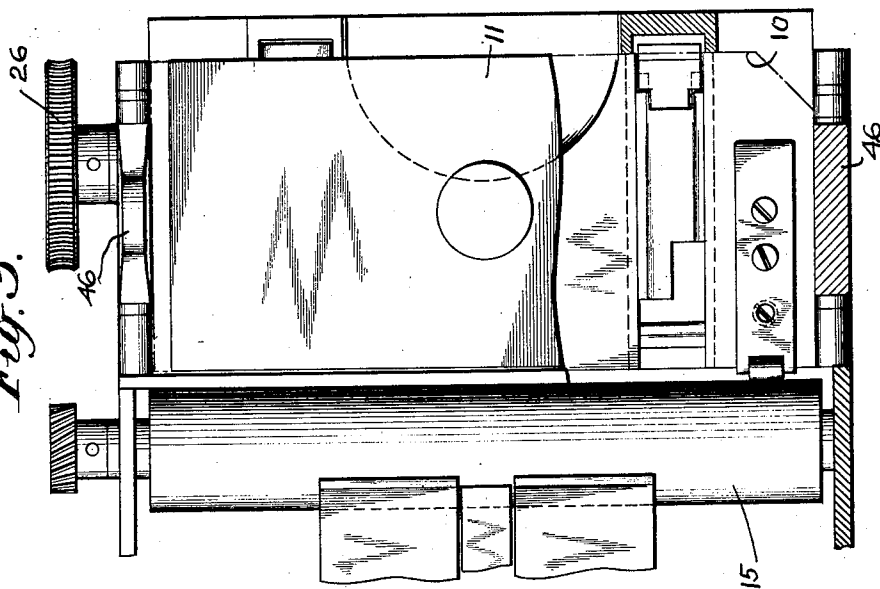


Fig. 4.

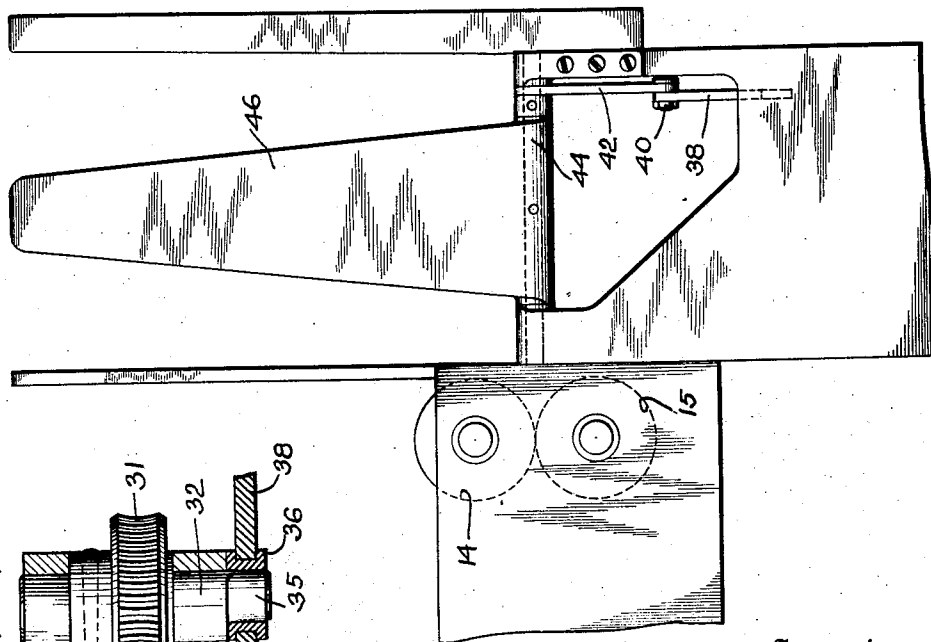
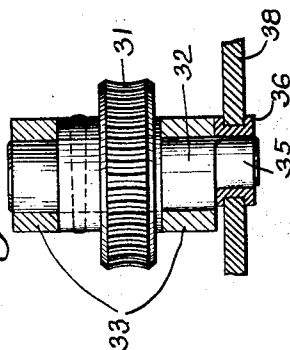


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CARD-FEEDING APPARATUS.

Application filed August 13, 1925. Serial No. 50,093.

This invention pertains to card feeding devices such as are used in card sorters, tabulating machines, and other machines of like nature.

5 An apparatus of that kind generally includes a magazine in which a stack of cards is placed, and a picker device which feeds one card at a time from the stack.

10 It is necessary that each card be in an exact position at the time the picker acts on it, for two reasons, first, in order that the mechanical operation of the picker be properly carried out, and second, in order that the index perforations on the card may be 15 in proper position relative to the analyzing or sensing devices of the machine into which the cards are fed.

Heretofore, in order to insure the above results it has been customary to make the 20 card magazine of such size that the stack of cards would fit into it rather snugly, thus making it necessary for the operator to very carefully jog the cards to align them before they could be placed in the magazine.

25 One of the objects of my present invention is to provide jogging (aligning) means in the feeding apparatus itself, in order to lighten the work of the operator, and to better insure the cards reaching the card 30 picker in proper condition to be fed.

Another object of my invention is to continually jog the cards in the magazine so there will be no possibility of cards being stuck together when they reach the picker.

35 Another object is to bring about the above results with no jogging action effective on a card at the instant it is about to be fed from the magazine.

40 Further and other advantages of the present invention will hereafter appear in the specification and in the drawings, which, by way of illustration, show what I now consider to be the preferred embodiment of the invention.

45 For purposes of illustration and explanation I have shown my invention as applied to the card sorting apparatus disclosed in my copending application, Serial No. 34,077, filed June 1, 1925.

50 In the drawings,

Fig. 1 is an end view of the sorter, partly in section, showing card magazine, pickers, and my jogging devices.

Fig. 2 is a side view, partly in section, on line 2—2 of Fig. 1.

Fig. 3 is a plan view of Fig. 1.

Fig. 4 is an end view of Fig. 3.

Fig. 5 is a view on line 5—5 of Fig. 1, showing the actuating means for the jogger.

10 is a stack of cards in the magazine, with the customary weight plate 11 on top of the stack. Cards are fed one at a time from the bottom of the stack by pickers 12, through throat 13 to the upper and lower feed rolls 14 and 15 respectively, past the analyzing brush 16, carried by the brush holding and setting structure designated generally as 17.

Pickers 12 are carried by reciprocating cross heads 20 actuated by arms 21 fast to shaft 22 which is rocked every card cycle by link 23, which in turn is actuated by a crank on the end of continually rotating shaft 25, driven through gear 26 by worm 27 on shaft 28, which is the main drive shaft of the machine. All of the above is fully described in my copending application above referred to.

Fast on shaft 25 is a gear 30, meshing with gear 31 which is secured to crankshaft 32, carried in bearings in fixed bracket 33 (Figs. 1, 2, and 5). On the end of shaft 32 is formed a crank pin 35 on which is a cross head 36. Mounted on cross head 36 is a cross member 38 having at its center a vertical slot 39 the sides of which closely engage suitable channels in cross head 36. It will be evident that as shaft 32 revolves, crank pin 35 will cause member 38 to vibrate endwise on account of its engagement with cross head 36. Member 38 will receive no vertical movement from pin 35 because the cross head is free to move vertically in slot 39.

The two ends of member 38 pivotally engage at 40 the lower ends of vertical arms 42. These arms 42 are fast to shafts 44 which are in the same horizontal plane as card throat 13.

Fast to shafts 44 and extending upwardly are the plates 46 which serve as the two end walls of the card magazine.

With this construction it is evident that as 38 vibrates back and forth, a rocking vibratory motion will be imparted to plates 46 about their pivots 44, and that the cards

in the magazine will be jogged endwise thereby.

Plates 46 are slightly tapered, so their distance apart, or in other words, the length of the magazine is greater at the top than at the bottom. This means that cards comparatively imperfectly jogged by the operator may be placed on top of the stack and will be perfectly jogged, loosened, and aligned by the time they reach the picker. The jogging effect gradually decreases as the card feeding position is approached, and at the feeding position there is no jogging effect whatever, as the pivot line 44 is in the same plane as the card being fed.

I claim:—

1. In a card feeding apparatus, a card magazine having oppositely disposed movable walls, and means to vibrate both of said walls to jog both edges of the cards which are disposed in a stack between said walls.

2. In a card feeding apparatus including in combination, card feeding means arranged to withdraw cards from the bottom of a stack, a card magazine having vibratory walls to jog the said stack of cards, and means to vibrate said walls while the cards are being fed from said magazine.

3. In a card feeding apparatus, a card magazine adapted to retain therein a stack of cards, devices to feed cards therefrom, and means including positively actuated devices to jog the stack of cards in one direction and then in the opposite direction while the stack is in the magazine.

4. In combination, a card magazine, a device to feed cards therefrom one at a time, means to jog the cards in said magazine

while cards are being fed therefrom, said jogging means having provisions to effect a maximum action on cards furthest from the feeding device, said action upon the cards decreasing as the feeding device is approached.

5. In combination, a card magazine, a device to feed cards therefrom one at a time, means to jog the cards in said magazine while cards are being fed therefrom, said jogging means having provisions to prevent jogging action on the card which is in position to be engaged by said feeding device.

6. The invention set forth in claim 4, in which the jogging means comprises vibratory walls of said card magazine.

7. The invention set forth in claim 5, in which the jogging means comprises vibratory walls of said card magazine.

8. The invention set forth in claim 3, in which means is provided to prevent jogging the card about to be fed.

9. A card feeding device including a magazine adapted to retain a stack of cards therein, means for feeding a card from the bottom of the stack in said magazine, card jogging means comprising vibratory walls for the magazine disposed at opposite edges of the stack, and means for positively vibrating both of the said walls to effect a maximum jogging action upon the cards most distant from the bottom of the stack and to effect no jogging action upon the card which is being fed from the bottom of the stack.

In testimony whereof I hereto affix my signature.

EUGENE A. FORD.