July 28, 1925. 1,547,948

T. A. NEVINS

MATCH MAKING MACHINE

Original Filed Nov. 28, 1922 2 Sheets-Sheet 1

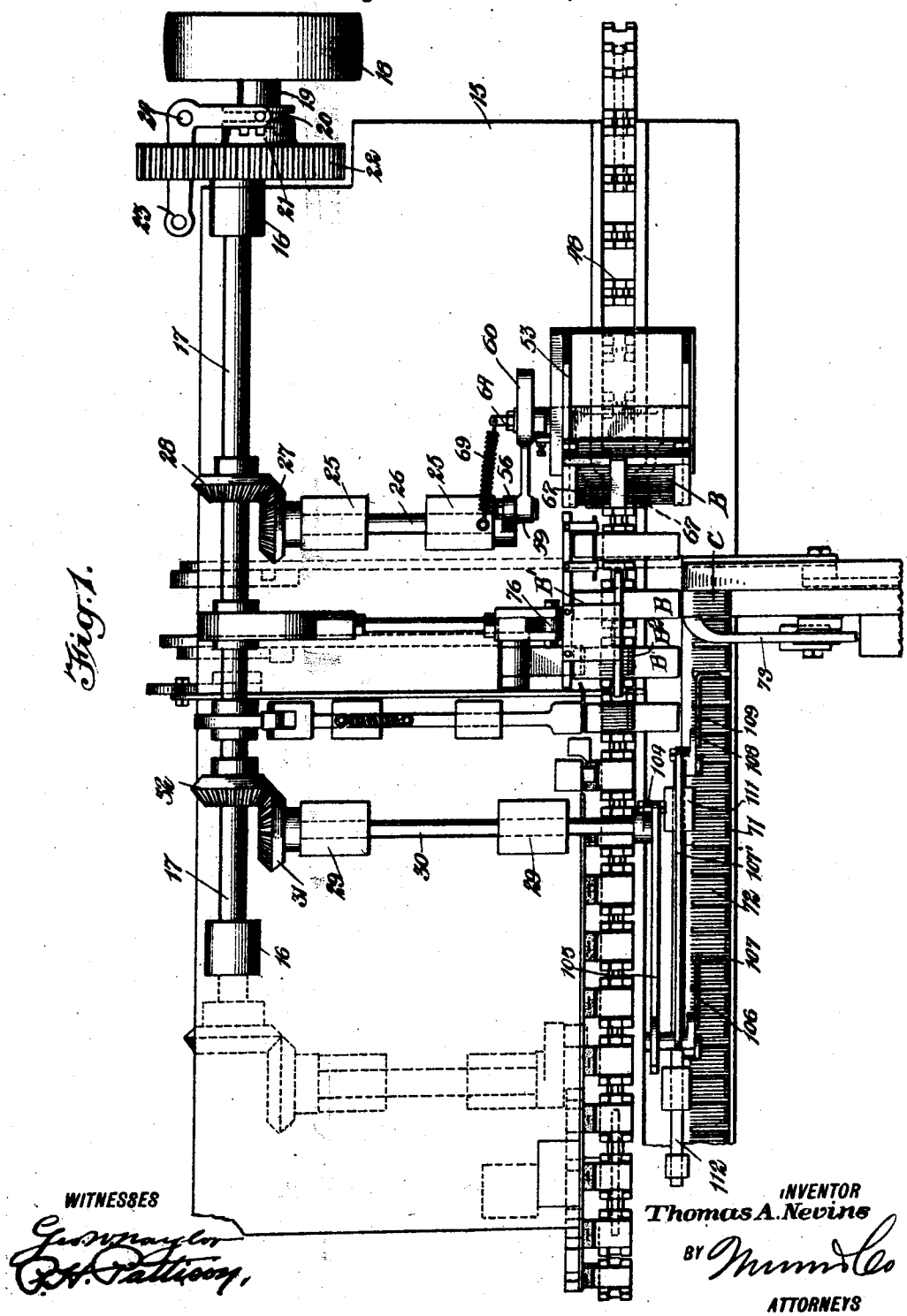


Fig. 1.

WITNESSES

INVENTOR
Thomas A. Nevins
BY Munn & Co
ATTORNEYS

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Fig. 2.

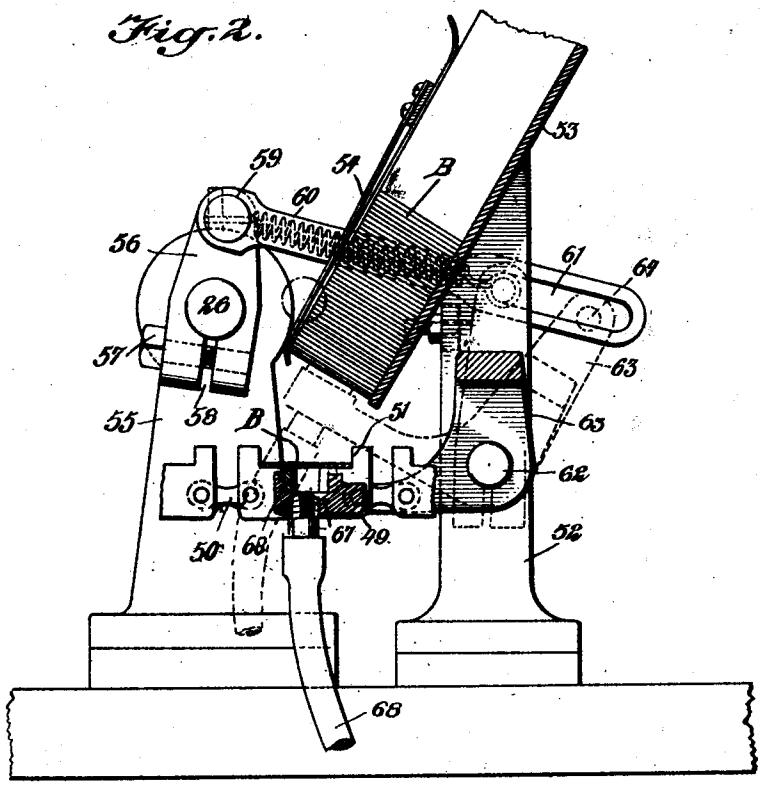
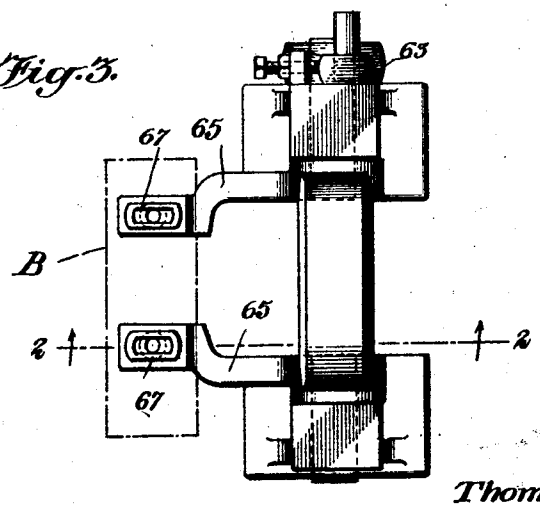


Fig. 3.



WITNESSES

INVENTOR
Thomas A. Nevins
BY Munn & Co.
ATTORNEYS

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UNITED STATES PATENT OFFICE.

THOMAS ALOYSIUS NEVINS, OF NEW YORK, N. Y., ASSIGNOR TO SUN MATCH CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MATCH-MAKING MACHINE.

Original application filed November 28, 1922, Serial No. 603,865. Divided and this application filed May 28, 1924. Serial No. 716,422.

To all whom it may concern:

Be it known that I, THOMAS A. NEVINS, a citizen of the United States, and a resident of New York city, borough of Manhattan, in the county and State of New York, have invented a new and Improved Match-Making Machine, of which the following is a full, clear, and exact description.

The present invention relates to new and useful improvements in match-making machines, and it pertains more particularly to that type of machine employed for manufacturing match packets or matches in book form, the present application being a division from my application filed November 28, 1922, bearing Serial No. 603,865.

It is one of the objects of the present invention to provide a new and improved form of mechanism for forming the strips which constitute the back of the match packets.

Suction or vacuum has been heretofore employed in the feeding of the strips, but in such mechanism it is the common practice to employ a mechanically driven or controlled valve whereby the vacuum is intermittently broken to release the strip from a vacuum feeding mechanism. The vacuum mechanism described has disadvantages, among the greatest of which is that when the vacuum is broken a sudden release of the strip causes the same to become disarranged with respect to its holder or carrier and thus ruins the operation of the machine.

It is a further object of the present invention to provide a suction or vacuum feeding mechanism wherein the vacuum is maintained constant, and the movement of the carrier or holder of the strips forming the match books serves to move the match books out of contact with the nozzle of the suction device, thus eliminating the necessity of a mechanically timed valve for establishing and breaking the vacuum or suction of the feed.

With the above and other objects in view, reference is had to the accompanying drawings, in which—

Figure 1 is a top plan view of a machine constructed in accordance with the present invention;

Fig. 2 is a detail sectional view taken on the line 2—2 of Fig. 3;

Fig. 3 is a detail plan view of a portion of the machine.

Referring more particularly to the drawings, the reference numeral 15 designates the machine bed, and said bed is supported by means of legs or the like (not shown). Mounted on the bed 15 are two bearings 16, and revolubly mounted in said bearings 16 is a shaft 17, which extends longitudinally of the bed. The reference character 18 designates a power pulley, and said pulley is carried by a shaft 19, to which is secured in such manner as to rotate therewith, a clutch collar 20. This clutch collar 20 is adapted to engage a clutch collar 21 carried by a gear immediately below a gear 22, which latter gear is mounted upon the shaft 17. The reference numeral 23 designates a lever pivoted as at 24, for operating the clutch collar 20. By this mechanism it is apparent that when the clutch collar 20 is engaged with the clutch element 21, the gear (not shown) will be operatively connected to the shaft 19, and will serve to drive the gear 22, and through the medium thereof, impart rotary motion to the shaft 17.

Mounted in bearings 25 is a shaft 26, which extends at right angles to the shaft 17, and said shaft 26 carries a bevel gear 27 adapted to mesh with a bevel gear 28 operatively connected to the shaft 17 in such a manner that said bevel gear 28 will, through the medium of the bevel gear 27, drive the shaft 26. Mounted in bearings 29 is a shaft 30, and said shaft 30 has operatively connected thereto a bevel gear 31, which in turn meshes with a bevel gear 32 carried by the shaft 17 in such a manner that through the medium of the bevel gear 31, the bevel gear 32 will drive the shaft 30.

The reference numeral 48 designates a carrier or conveyer adapted to be operated by a suitable mechanism in a step-by-step manner. As best seen in Fig. 2, this conveyor 48 comprises a plurality of carriers 49, which are connected by means of pivotal links 50. Each of these carriers 49 has a depressed portion 51 in which the various elements are packed to be retained.

Carried by a standard 52 secured to the main bed 15 is a hopper 53, and said hopper is adapted to carry elongated strips of cardboard or similar material from which the books containing matches are formed. This hopper is provided with a spring 54, by means of which the cardboard strips are prevented from accidental displacement from the lower end of the hopper. This spring, however, permits of the withdrawal of the cardboard strips from the bottom of the hopper by the vacuum or suction device.

The bearings 25 heretofore mentioned are carried by standards 55, and, as more clearly shown in Fig. 2, the shaft 26 projects beyond the innermost bearing 25. This shaft is formed with a crank arm 56, and said crank arm is adjustable circumferentially of the shaft 26 by means of a screw 57, said crank arm being split as at 58. Connected to the crank arm 56, as at 59, is a lever 60, and the opposite end of said lever is provided with an elongated slot 61.

Pivotally secured as at 62 to the standard 52 heretofore described as carrying the hopper 53, is a right-angular member 63. This right-angular member 63 has its upper end provided with a pin 64 adapted to operate in the elongated slot 61 of the lever 60. The opposite end of this right-angular member is provided with two arms 65, more clearly shown in Fig. 3, and each of these arms is provided with a nozzle portion 67. Leading from the nozzle portion 67 to a suitable vacuum producing device (not shown) is a tube 68, by means of which vacuum is created at the nozzle 67. In order to form a more perfect grip on the cardboard, the nozzle 67 is provided with a friction producing insert 68 in the form of a rubber gasket or the like. Connected to the bearing 25, as at 70, is a spring 69, and the opposite end of the spring is connected to the pin 64 heretofore mentioned. The mechanism just described is located preferably at the right of the machine and overlies the conveyer 48 heretofore mentioned.

Carried by the front of the machine is a feed guide 71, and said feed guide 71 is adapted to receive the match strips 72, it being understood that two of these match strips are fed together to the machine, and the match strips are moved by a step-by-step mechanism to be hereinafter more fully described. These match strips are fed toward a cutting machanism 73 of conventional form, and after they are cut they are fed into the machine by a feeding mechanism common to this type of machine.

The feeding mechanisms heretofore referred to are operated by means of the shaft 30, the forward end of which is provided with a crank 104, to which is pivotally connected a lever 105. This lever 105 has pivotal connection at one end with a rocking member 106, the end of which is provided with a right-angular extension 107. Pivotally connected, as at 108, is a lever 109, similar in construction to the lever 106, and said levers are pivotally connected by means of a rod 107′. By this construction it is apparent that each time the crank member 104 is operated, the levers 106 and 109 will be elevated and again depressed. Simultaneously with this movement a projection 110 on the rod 107′ engages between stops 111 and causes a reciprocating movement of a member 112 on which the levers 106 and 109 are pivotally mounted, as indicated at 113 and 114, respectively.

The device operates in the following manner:

The hopper 53 is filled with the blanks from which the covers or books are formed and the matches are placed in the feed guide 71, preferably in the form of two super-imposed strips. The machine is now started and immediately the feeding mechanism moves the match strips forward or to the right in Fig. 1. Simultaneously with this operation, the suction device has been elevated as shown in dotted lines in Fig. 2, and has caused the bottom blank to be removed from the hopper 53. As this suction device moves downwardly, the bottom strip is deposited in the carrier 49 of the conveyer 48, which is directly beneath the hopper 53, it being understood that the conveyer is moved in a step-by-step manner as heretofore mentioned. As the machine continues to operate, the blanks are removed singly from the hopper 53 and deposited in the empty carriers of the conveyer as they are positioned therebeneath.

With the parts in the position shown in Fig. 2, a movement of the conveyer to the left of said figure will move the blank out of contact with the nozzle of the vacuum or suction feeding device and will position an empty carrier of the conveyer in a position to receive one of the blanks upon the next operation of the suction device. As shown in Fig. 1, these blanks move to the left of the machine, the blanks being designated by the reference character B, and when they reach the position designated by the reference character B′ in Fig. 1, the matches designated by the reference character C, which have been severed from the strip, are moved by the feeding mechanism on to the blank B, as designated by the reference character B^2 in Fig. 1.

By the construction of the vacuum or suction feeding apparatus, it is apparent that it is not necessary to have a timed valve which will automatically release said vacuum, but that sufficient vacuum by this construction can be obtained to position the blanks in the conveyer, and, at the same time, said vacuum is not strong enough to

prevent movement of the blanks relative to the vacuum nozzle through the medium of the conveyer.

What is claimed is:

1. In a machine for making match packets, a conveyer, a hopper carrying the blanks from which the match packets are formed, and a vacuum mechanism including a pair of nozzles, one movable at each side of the conveyer adapted to remove the blanks from said hopper and deposit them upon said conveyer, said vacuum mechanism being continuously operated.

2. In a machine for making match packets, a conveyer, a hopper carrying the blanks from which the match packets are formed, said hopper overlying said conveyer, and pneumatic means including a pair of nozzles, one movable at each side of the conveyer for singly removing the blanks from the hopper and depositing them upon the conveyer, said pneumatic means being continuously operated.

3. In a machine for making match packets, a conveyer, a hopper disposed above said conveyer, said hopper containing the blanks from which the packets are formed, and a pneumatic means including a pair of nozzles, one movable at each side of the conveyer for extracting the blanks from said hopper and depositing them upon the conveyer, said pneumatic means including a continuously operated suction nozzle movable from a position in proximity to the conveyer to the hopper and back again to said conveyer.

4. In a device of the character described, in combination, a hopper, a conveyer movable with respect thereto, and a continuously operated suction nozzle adapted to singly remove the contents of the hopper and deposit the same upon said conveyer, said conveyer constructed to receive and engage an article thus serving to move the articles out of engagement with said continuously operated nozzle after the articles have been deposited thereon by said nozzle.

5. In a match-making machine, a conveyer constructed to receive and engage articles, and a continuously operated suction nozzle adapted to deposit articles upon said conveyer, said nozzle occupying a position adjacent said conveyer and intermittently held against movement relative thereto to permit of the conveyer having recesses therein receiving the articles thus serving as a stripper to remove the articles from said continuously operated suction nozzle.

6. In a match-making machine, an intermittently movable conveyer, and an intermittently movable continuous suction nozzle, said conveyer and nozzle being movable at different intervals to permit of the nozzle depositing articles on the conveyer having recesses therein receiving the articles and the conveyer stripping the articles from the nozzle without interrupting the suction thereof.

7. In a match-making machine, an intermittently operated conveyer, a hopper, an intermittently operated suction nozzle having uninterrupted suction, said conveyer being inoperative during an operation of the nozzle to permit the nozzle depositing articles thereon from the hopper, said nozzle being immovable during an operation of the conveyer to permit of said conveyer stripping the articles from the nozzle by movement of said conveyer.

THOMAS ALOYSIUS NEVINS.