A. B. TODD & W. J. H. FOGELSTROM.

MATCH SORTING MACHINE.

APPLICATION FILED MAY 9, 1912.

1,035,272.

Patented Aug. 13, 1912.

Fig. 1.

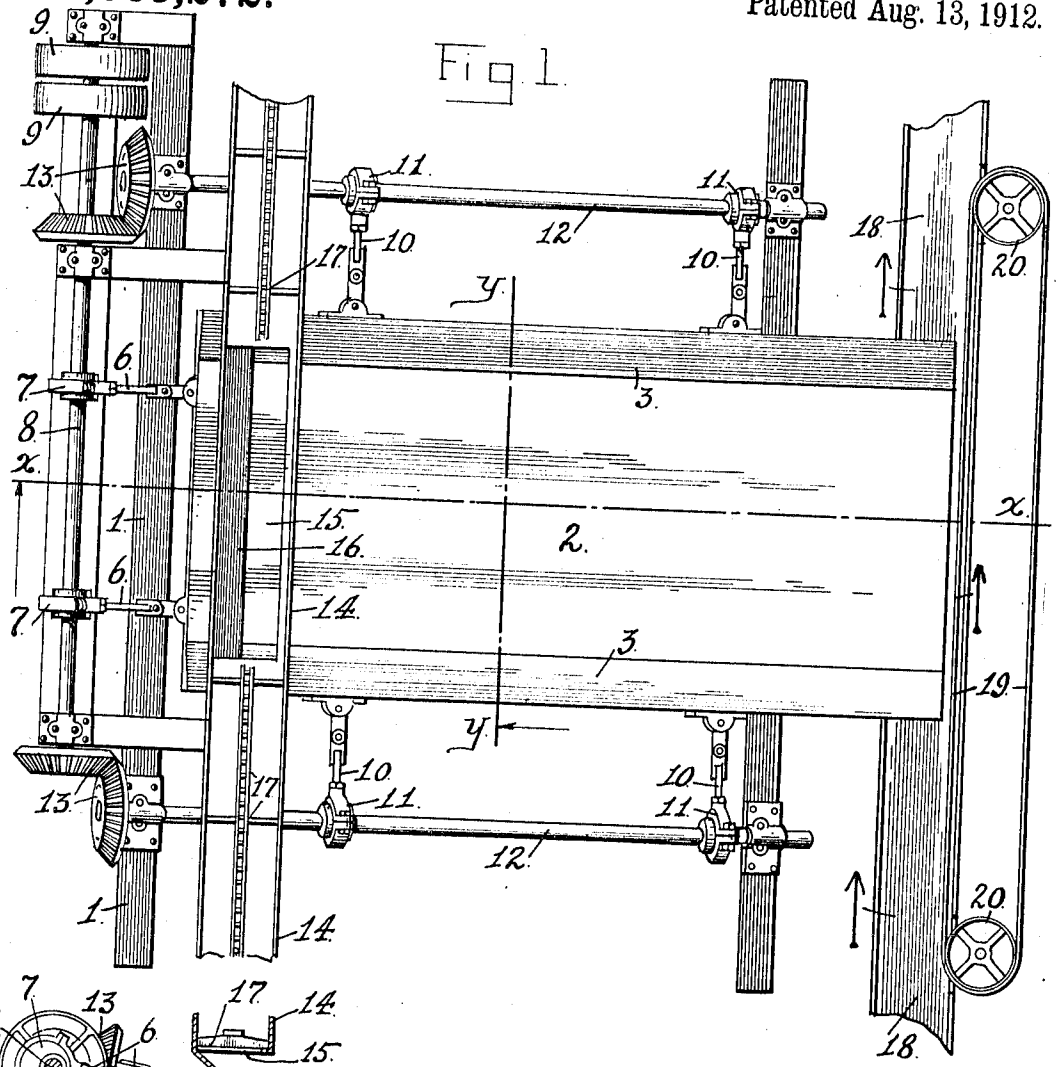


Fig. 2.

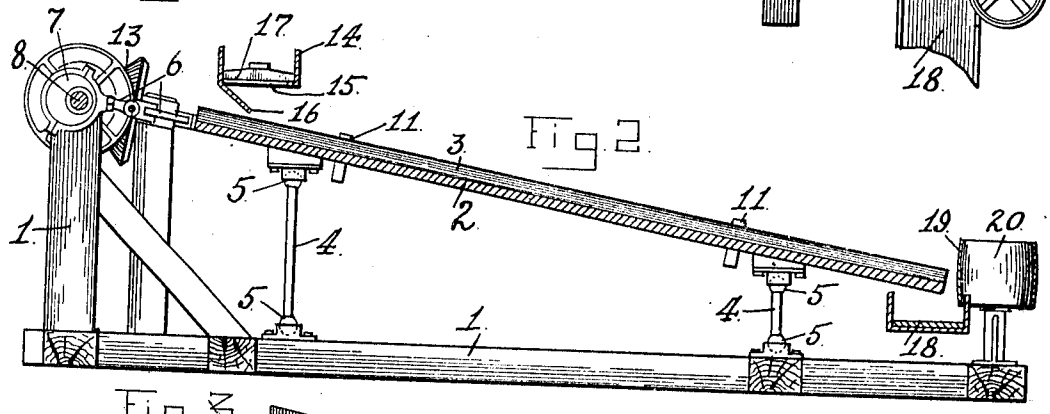
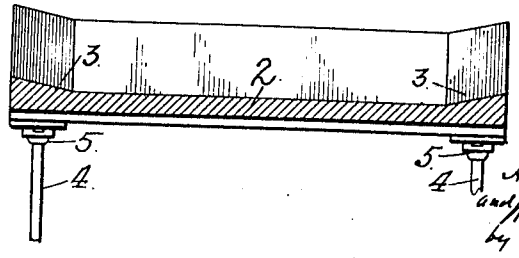


Fig. 3.



Witnesses

Caitlin L. Slee.

S. Courtnie.

Inventors.

Alexander B. Todd

and Walter J. H. Fogelstrom

by Wm F. Booth

their Attorney.

UNITED STATES PATENT OFFICE.

ALEXANDER B. TODD, OF CHICO, AND WALTER J. H. FOGELSTROM, OF OAKLAND, CALIFORNIA; SAID FOGELSTROM ASSIGNOR TO SAID TODD.

MATCH-SORTING MACHINE.

1,035,272. Specification of Letters Patent. **Patented Aug. 13, 1912.**

Application filed May 9, 1912. Serial No. 696,139.

To all whom it may concern:

Be it known that we, ALEXANDER B. TODD and WALTER J. H. FOGELSTROM, citizens of the United States, residing the said TODD at Chico, in the county of Butte and State of California, and the said FOGELSTROM at Oakland, in the county of Alameda, State of California, have invented certain new and useful Improvements in Match-Sorting Machines, of which the following is a specification.

Our invention relates to the general class of sorting machines, and particularly to such machines as have for their object the symmetrical disposition of indiscriminately commingled objects.

Our invention is particularly intended for the sorting of matches, that is, for disposing them with their heads in one direction.

Our object is to save matches which usually go to waste.

In match-factories during the several processes, manipulations, and transportations, many good matches fall or are dropped from the various holders, conveyers, troughs, bins, and other appliances and apparatuses. These matches scatter indiscriminately over the floor, and on account of the cost of recovering them in shape to be packed, are usually swept away and burned up, thus entailing quite a loss. Our machine is intended to save this waste, by providing a means for easily and effectually sorting these matches so that their heads will lie in one direction, thus enabling them to be packed.

To this end our invention consists in the novel sorting-machine which we shall now fully describe.

Referring to the accompanying drawings:—Figure 1 is a plan of our machine. Fig. 2 is a longitudinal section on line *x*—*x* of Fig. 1. Fig. 3 is a cross section of the table on line *y*—*y* of Fig. 1.

1 is a frame from which is supported the table 2. This table, in its best form, has a smooth surface, with upwardly inclined sides or margins 3. It is best mounted at an inclination, and is supported in such manner that it may have imparted to it a shaking movement. These refinements are all to the end of properly delivering its load at its foot as we shall presently describe, though in the broader view of our invention we do not confine ourselves to these details, the essential feature of this part of the machine being simply a table to receive the matches, advance them and direct them head foremost to and at the foot. But to accomplish this in the best manner, the surface of the table should be quite smooth, such, for example, as metal will afford; its sides or margins should be slightly upraised to confine the matches; it should be well inclined from head to foot to enable gravity to serve in advancing and turning the matches head-down, and it should be given a shaking movement for the two-fold purpose of assisting the progress of the load and to better distribute and spread out the matches over its surface with a view of preventing clogging and of giving each match sufficient independence to enable it to turn itself head downward or foremost without interference.

The table is supported upon standards 4 which yield or swing or rock, being, for this purpose, fitted with ball-joints 5 above and below.

The character of the shaking movement may be of any nature suited to the purpose. We have here shown a combined end and side shake. The end shake is effected by the links 6 connected with the head of the table, said links being operated by eccentrics 7 on the drive shaft 8, upon which are the usual fast and loose pulleys at 9. The side shake is given by the links 10, operated by eccentrics 11 on side shafts 12, which are driven from the main shaft 8 through the bevel-gears at 13.

Supported in suitable manner above the head of, but clear of the shaking table, is the hopper 14, which in that portion directly over the table has a feed throat 15 controlled by a guide lip 16, to properly direct the matches to the table. In the hopper is a traveling open or flight conveyer 17 to scrape the matches to the delivery throat of the hopper.

Mounted below but clear of the foot of the table is a conveyer 18 which is caused to travel in the direction indicated by the arrow in Fig. 1. This conveyer may be of any suitable character and mounted and driven in suitable manner, its purpose being to receive the matches from the foot of the table and to carry them to their destination.

Associated with the foot of the table and with the traveling conveyer 18 is the posi-

tioning member 19. This is in the form of a traveling belt, preferably of rubber, set on edge so that its face or functional surface is disposed vertically. This operative face overlies the conveyer 18 and is spaced from the delivery end or foot of the table 2 by a distance less than that at which a match projecting from the table foot would be overbalanced, so that the match heads while the matches are still supported by but are projecting from the table, must come in contact with said belt; but this distance is great enough to permit the free delivery of the matches upon the conveyer without tendency to clog.

The belt 19 is mounted upon pulleys 20 to which power is transmitted in any suitable manner. The functional surface of the belt 19 moves in the direction of the arrow as indicated in Fig. 1.

The operation of the machine is as follows:—The matches are placed in the hopper 14 and by the conveyer 17 are moved along and allowed to fall through the hopper throat upon the head of the shaking table 2 indiscriminately as far as position is concerned. Upon the smooth surface of the table the immediate tendency of any given match is to turn head downward. This is due mainly to gravity but is assisted by the greater diameter of the head which practically constitutes the match a cone throughout its length, and is further assisted by the relative smoothness of the head as compared with the other end of the match, which last named end by reason of its greater frictional contact acts as a pivotal center for the match to roll upon. This last named feature namely the smoothness and roundness of the head will account for the fact that even square matches will roll head downward on the table. This tendency of the match to turn with its head down is, on account of the shaking of the table, interfered with as little as possible, the matches being well spread out and each given a chance to follow its tendency, and this shaking motion also insures the advance of the matches. The result is that the matches gradually proceed to the table foot and project their heads therefrom until said heads, coming in contact with the traveling belt 19, the matches are turned to a position at right angles to their delivery position on the table, and they fall lengthwise upon the conveyer 18, all with their heads in the same direction, which is the object sought; and in this position they are carried off to their packing destination.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a match-sorting machine, the combination of a table constructed to permit the matches to roll thereon in order to turn head foremost and said table being disposed to advance the matches so turned to one edge thereof; a traveling member spaced from said edge of the table and adapted to receive the contact of the heads of the matches while said matches are still supported by the table, whereby they are turned and caused to fall from the table with their heads all in the same direction; and an underlying receptacle to receive said matches.

2. In a match-sorting machine, the combination of a table constructed to permit the matches to roll thereon in order to turn head foremost and said table being disposed to advance the matches so turned to one edge thereof; a traveling belt separated from and moving parallel with said edge of the table, said belt being adapted to receive the contact of the heads of the matches while said matches are still supported by the table, whereby they are turned and caused to fall from the table with their heads all in the same direction; and an underlying receptacle to receive said matches.

3. In a match-sorting machine, the combination of a table constructed to permit the matches to roll thereon in order to turn head foremost and said table being disposed to advance the matches so turned to one edge thereof; a traveling belt separated from and moving parallel with said edge of the table, said belt being mounted with its operative surface vertically disposed and adapted to receive the contact of the heads of the matches while said matches are still supported by the table, whereby they are turned and caused to fall from the table with their heads all in the same direction; and an underlying receptacle to receive said matches.

4. In a match-sorting machine, the combination of an inclined shaking table to receive, turn head downward and advance the matches to the foot of said table; a traveling member spaced from the foot of the table and disposed to receive the contact of the match heads as they are projected from the table foot while the matches are still supported by the table whereby the matches are turned and caused to fall from the table with their heads all in the same direction; and a conveyer underlying the table foot and traveling member to receive said matches.

5. In a match-sorting machine, the combination of an inclined shaking table to receive, turn head downward and advance the matches to the foot of said table; a traveling belt moving parallel to the foot of the table and spaced therefrom by a distance adapting it to receive the contact of the match heads projected from the table foot while the matches are still supported on the table whereby said matches are turned as they fall from the table foot with

their heads all in the same direction; and a conveyer underlying the table foot and belt to receive the matches.

6. In a match-sorting machine, the combination of an inclined shaking table to receive, turn head downward and advance the matches to the foot of said table; a traveling belt set on edge with its operative surface disposed vertically, said belt having its operative surface moving parallel to the foot of the table and spaced therefrom by a distance adapting it to receive the contact of the match heads projected from the table foot while the matches are still supported on the table whereby said matches are turned as they fall from the table foot with their heads all in the same direction; and a conveyer underlying the table foot and belt to receive the matches.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

ALEXANDER B. TODD.
WALTER J. H. FOGELSTROM.

Witnesses:
WM. F. BOOTH,
D. B. RICHARDS.