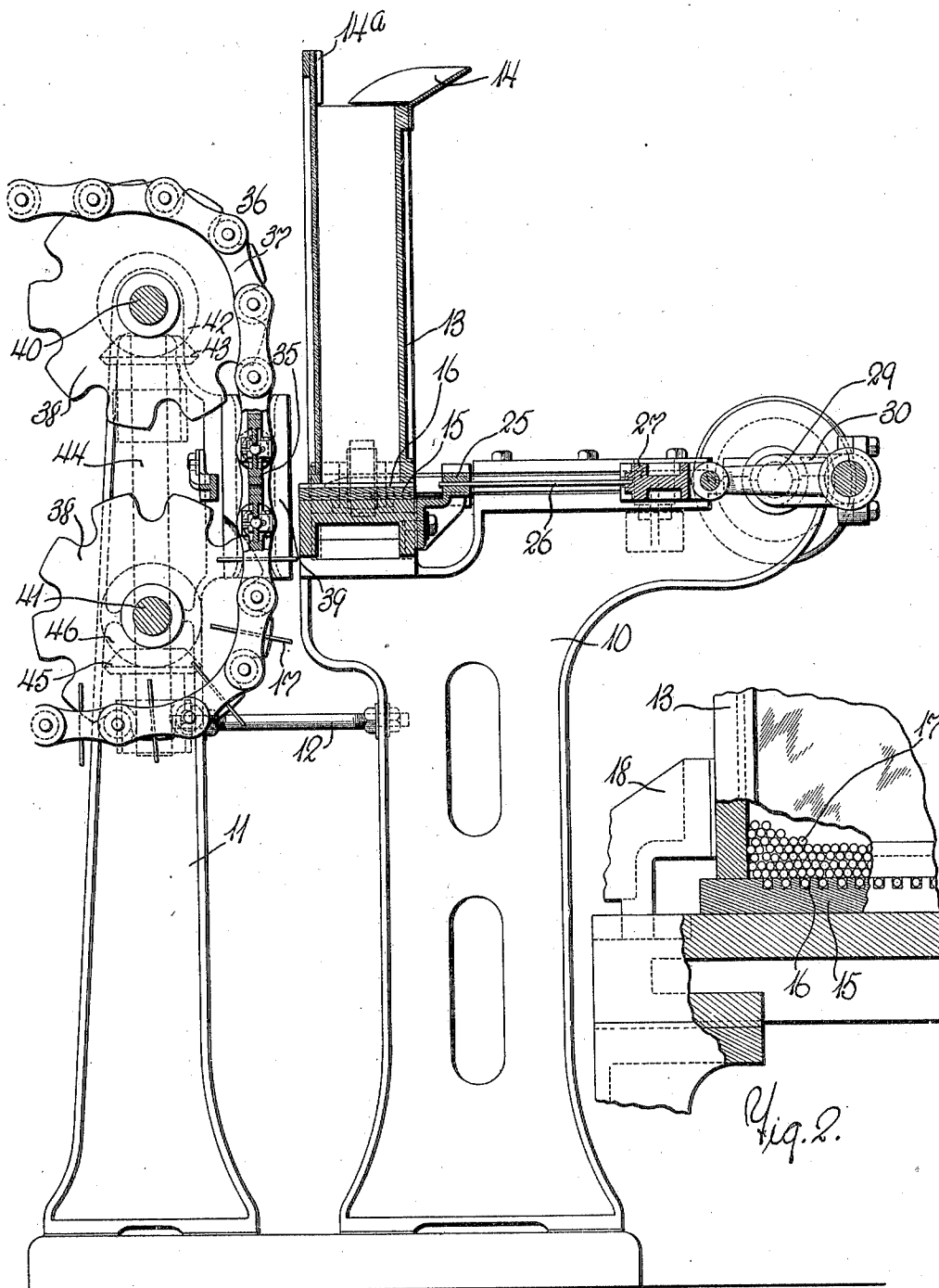


C. A. TATUM & W. H. PARKER.
MATCH MACHINE.
APPLICATION FILED FEB. 10, 1909.

948,027.

Patented Feb. 1, 1910.
4 SHEETS—SHEET 1.



Witnesses:
Ralph H. H. H.
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Fig. 1.

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By their Attorneys,
W. B. Hutchinson.

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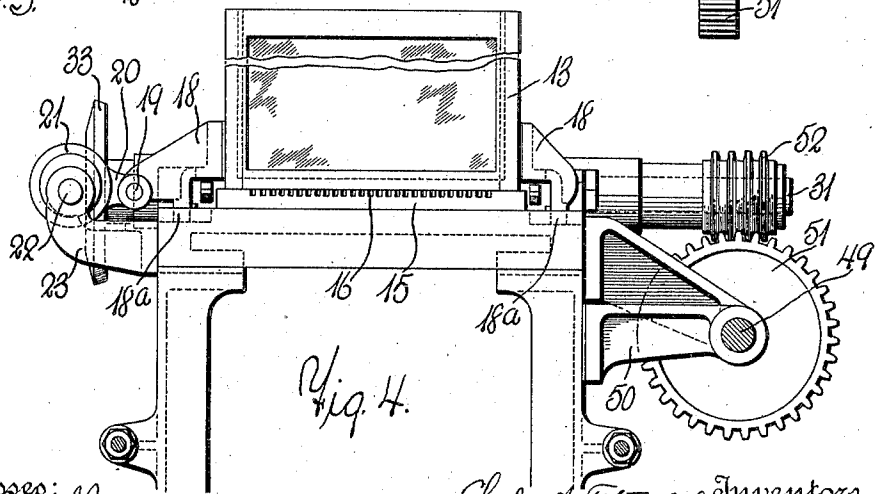
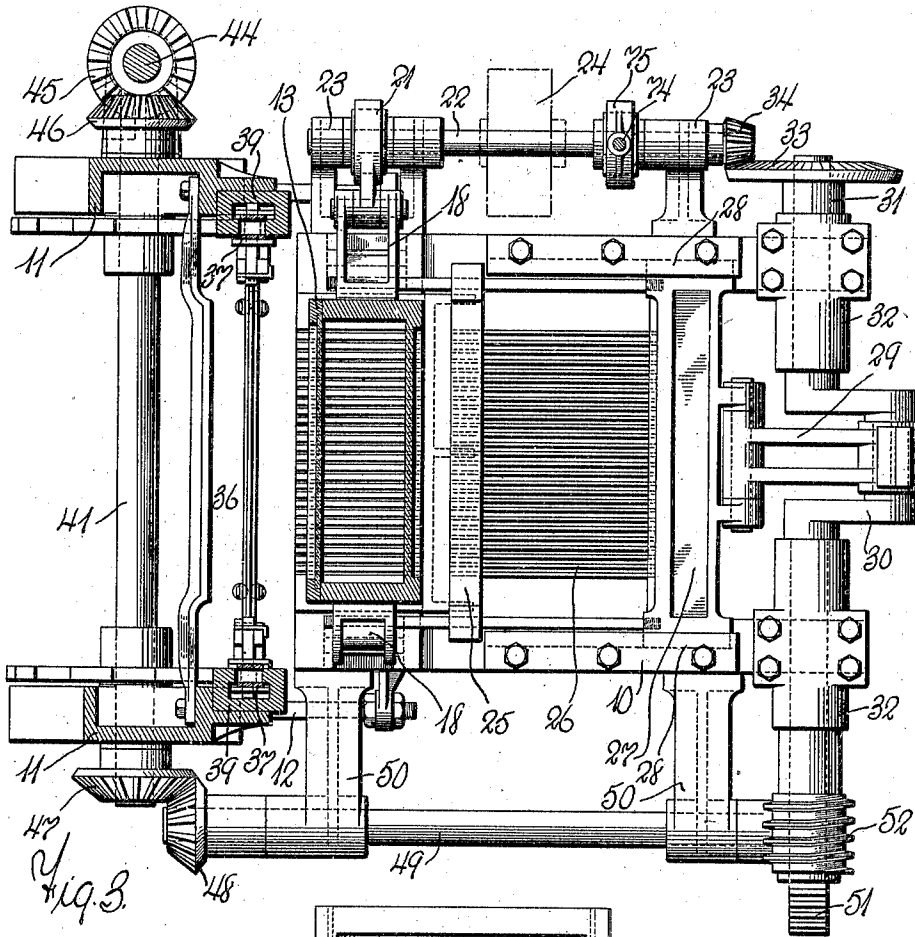
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4 SHEETS—SHEET 2.



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MATCH MACHINE.
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4 SHEETS—SHEET 3.

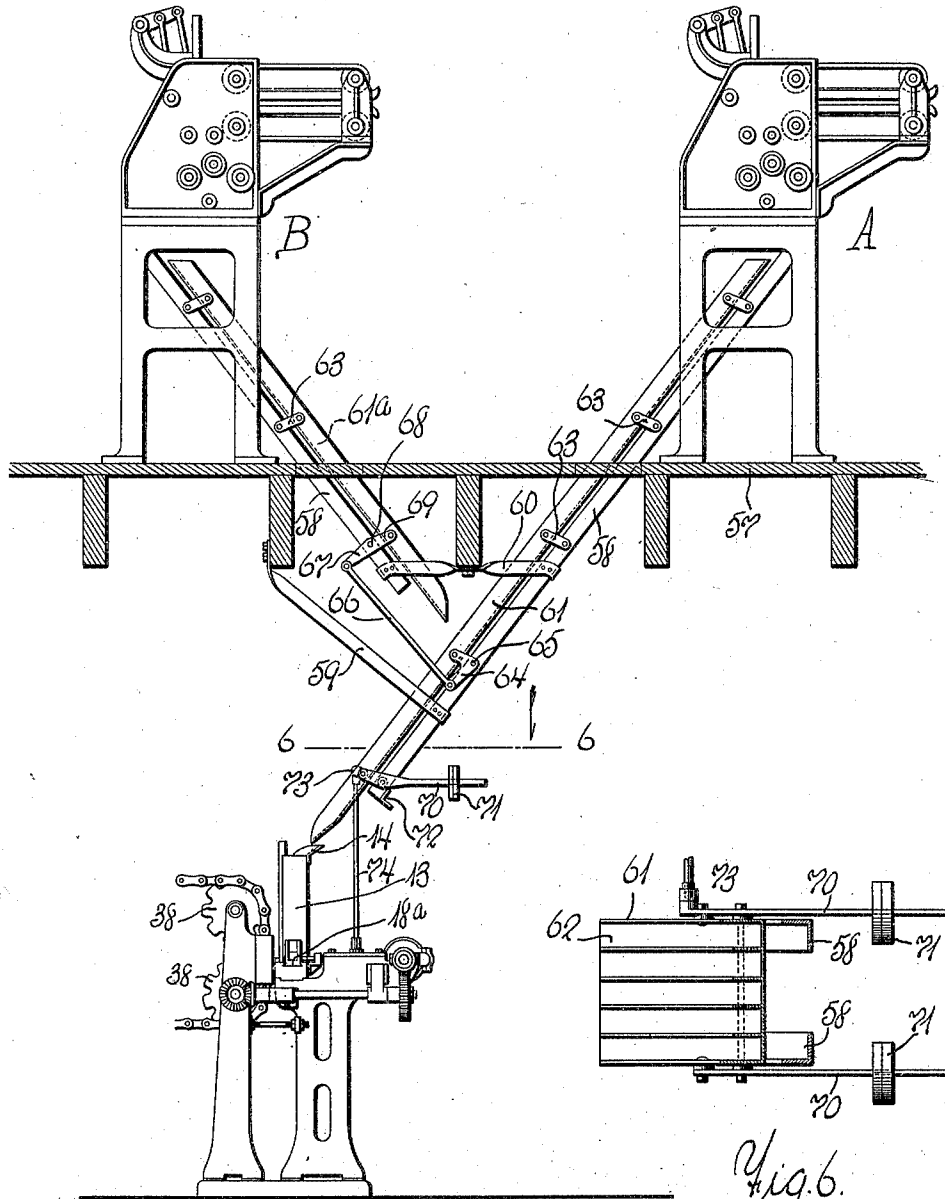


Fig. 5.

Fig. 6.

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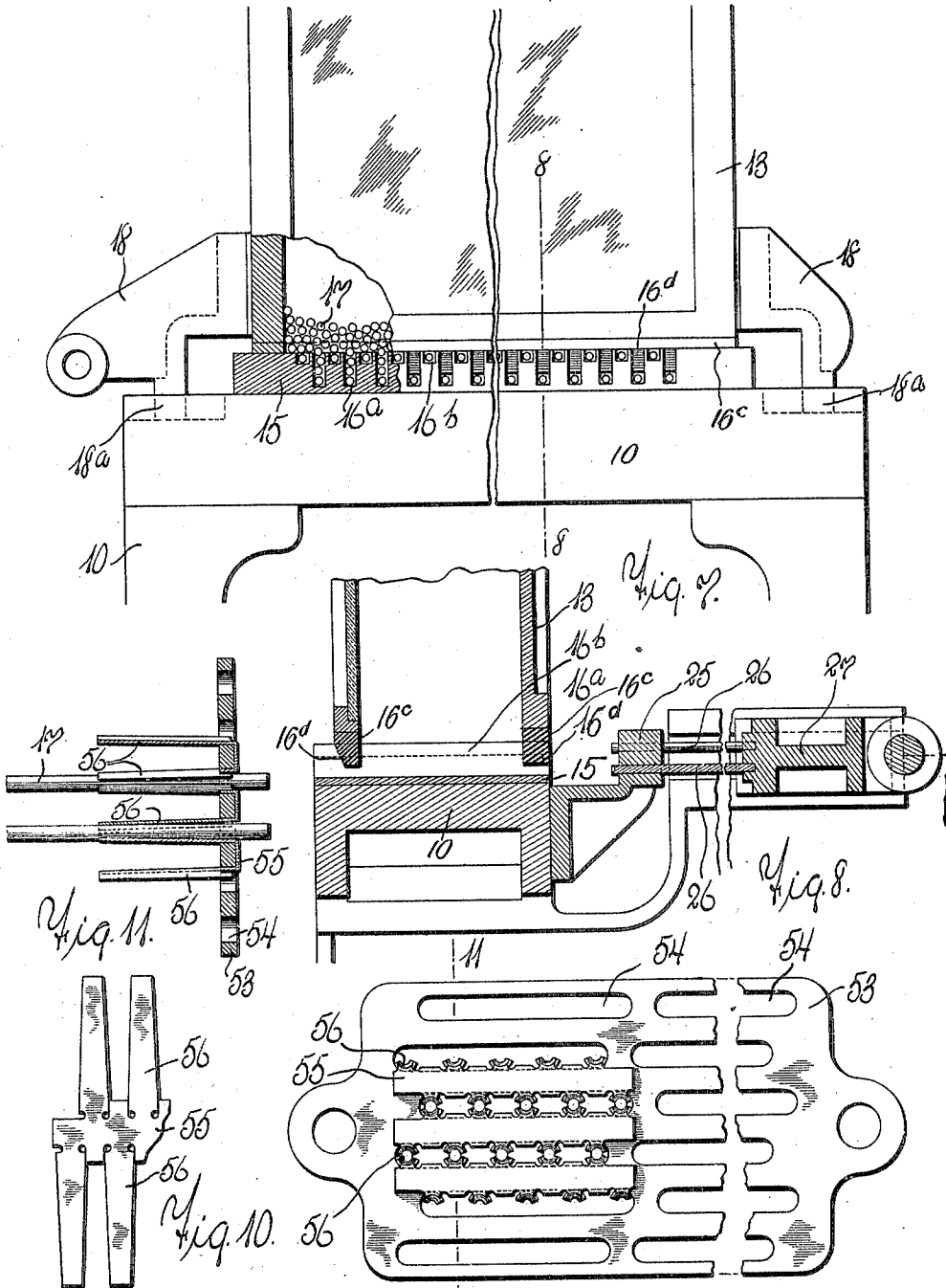
MATCH MACHINE.

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948,027.

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4 SHEETS—SHEET 4.



Witnesses:
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Fig. 9. Charles A. Tatum Inventors
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UNITED STATES PATENT OFFICE.

CHARLES A. TATUM, OF NEW YORK, N. Y., AND WILLIAM H. PARKER, OF PASSAIC, NEW JERSEY, ASSIGNORS TO SAID TATUM.

MATCH-MACHINE.

948,027.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed February 10, 1909. Serial No. 477,052.

To all whom it may concern:

Be it known that we, CHARLES A. TATUM, of the city, county, and State of New York, and WILLIAM H. PARKER, of Passaic, Passaic
5 county, New Jersey, have invented a new and useful Improvement in Match-Machines, of which the following is a full, clear, and exact description.

Our invention relates to improvements in
10 match machines, and the object of our invention is to produce a machine in which a hopper is used and from which the match splints are delivered into a suitable carrier ready for dipping in the paraffin and firing com-
15 positions.

The object of our invention is to improve the character of hopper machines used in connection with continuous carriers, to provide means by which several cutting machines can supply their splints to one hop-
20 per, to provide for delivering the splints straight and accurately either in one row or a plurality of rows to a carrier, and also to produce a simple form of carrier which is adapted to grip the individual splints firmly
25 and yet in such a way as to enable them to be readily discharged.

In general, our invention is intended to produce a machine which is not expensive,
30 which is very reliable, which will work rapidly, and will reduce the cost of matches.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters
35 indicate corresponding parts in all the views.

Figure 1 is a broken sectional view of the machine embodying our invention. Fig. 2 is an enlarged broken detail view partly in section, showing the construction of the hop-
40 per. Fig. 3 is a sectional plan of the machine. Fig. 4 is an elevation of the hopper and a part of the mechanism for operating it. Fig. 5 is a sectional elevation showing the arrangement of the cutting machines and means by which they deliver to a single
45 hopper. Fig. 6 is a detail on the line 6—6 of Fig. 5, showing the chute which delivers from one of the cutting machines into the hopper. Fig. 7 is a broken sectional elevation of a preferred form of hopper, in which
50 a plurality of rows of splints are arranged for delivery to the carrier. Fig. 8 is a broken enlarged sectional view showing the preferred means of delivering splints in
55 plural rows to the carrier. Fig. 9 is a

broken face view of one of the carrier plates with the splint grippers therein. Fig. 10 is a broken detail view showing the blank from which the splint grippers are formed, and Fig. 11 is a section on the line 11—11 of
60 Fig. 9.

The machine can be provided with any suitable supporting frame, and we have shown a frame 10 supporting the hopper mechanism, a frame 11 supporting the carrier mechanism, and tie-bars 12 connecting the two frames. The hopper 13 is mounted above the frame 10, and it has preferably though
65 not necessarily, transparent sides so that the condition of the splints therein can be readily observed. It also has a spout 14 at the top, and a raised side 14^a opposite the spout so that the splints can be readily delivered into it in straight condition. The hopper
70 13 reciprocates over a bed plate 15 in which there are a series of grooves 16 adapted to receive the splints 17 which lie straight in the hopper 13. There may be a single row of these grooves 16, of such depth that each
75 will receive one splint at a time only, or the grooves may be of graduated depths as shown in Fig. 7 so that one row of grooves— as for instance 16^a—will be deep, a second
80 row will be less deep as shown at 16^b, and this arrangement might be carried still further if desired. Where this arrangement is used, the grooves 16^a are as much deeper
85 than the grooves 16^b as the required space between the rows of splints in a carrier.

Where the deeper grooves 16^a are used, the hopper 13 moves over a plate 16^c which rests on the plate 15, between the hopper and said plate 15, and which has teeth 16^d (see
90 Figs. 7 and 8) extending down into the grooves 16^a, and to within about the thickness of a match splint from the bottom of the groove, so that the teeth will prevent
95 more than one match at a time from being discharged from each groove.

The principle of the machine is the same
100 whether a single or a plurality of rows of splints are pushed from the hopper. The drawings, Figs. 1 to 4 show the machine as adapted to the single row of splints.

The hopper 13 can be reciprocated in any
105 convenient way so as to cause the splints to be shaken down into the grooves 16, and it is shown arranged between brackets 18 having feet 18^a moving in suitable grooves in the top of the machine frame, and one of these
110

brackets is pivoted as shown at 19 in Fig. 4, to a pitman 20 connected with and operated by an eccentric 21 on a shaft 22. This shaft is mounted in suitable brackets 23, and it
5 can be provided with a driving pulley 24 shown by dotted lines in Fig. 3, or with any other suitable driving means.

When the hopper has been reciprocated and the grooves 16 filled with splints, the
10 splints are ejected from the grooves by the plungers 26 (see Figs. 1 and 3) which move through a suitable guide-bar 25 and are thus caused to accurately enter the grooves 16, thereby pushing the splints from the grooves
15 into the carrier 36 which will be hereinafter referred to. Any suitable means can be used for operating the plungers, but as shown they are carried by a cross head 27 which moves in suitable guide ways 28 and is actuated by a pitman 29 connecting with
20 a crank 30 on the shaft 31, the latter being mounted in bearings 32 and connecting by gear wheels 33 and 34 with the shaft 22 already referred to.

25 When the splints are ejected from the hopper by the mechanism just described, they are forced into the carrier plates 35, which as shown in Fig. 1, can be of any usual type, but we prefer to use the form of
30 carrier shown in Figs. 7 to 10, and hereinafter referred to in detail. The carrier plates, whatever they may be, are linked together by the links 37 in the customary manner, and they are carried over suitable
35 sprocket wheels 38. To insure that the carrier plates are held firm while the splints are inserted in them, guides 39 are arranged so that the sides of the carrier will move through them at this point, these guides being
40 vertical, and placed as shown in Figs. 1 and 3. Obviously the carrier can be moved in any usual or suitable manner, and we have shown the sprocket wheels 38 carried on shafts 40 and 41, arranged one above the
45 other, the upper shaft connecting by gears 42 and 43 shown by dotted lines in Fig. 1, with a vertical shaft 44 which also connects by gears 45 and 46 with the lower shaft 41, and the latter connects by gears 47 and 48
50 (see Fig. 3) with a shaft 49 which is mounted in brackets 50 and connects by gears 51 and 52 with the shaft 31 already referred to.

The driving mechanism which we have described and which is shown in Fig. 3, makes
55 a very convenient way of driving the several parts, but of course this is not essential, and any suitable driving means can be employed.

As before remarked, the preferred form
60 of hopper and carrier, and of mechanism for passing the splints from the hopper into the carrier, is shown in Figs. 7 to 10. Here a carrier plate 53 is used which can be hinged in the carrier chains as is usual in machines
65 of this kind and as shown in the drawings,

and this plate is provided with longitudinal slots 54 which will therefore be transverse of the carrier 36. The grippers are held in the slots and are formed from metallic plates 55 which have projecting fingers 56
70 shown in blank form in Fig. 10, and in finished form in Fig. 11. These fingers are bent so as to extend through the plates 53 and project from the back thereof, and the fingers when shaped are preferably con-
75 caved so that they will nicely grip the splints 17. They are arranged so that the fingers on one plate 55 will come opposite those of the next adjacent plate, as shown clearly in the drawings, and thus semi-tubular grip-
80 pers are formed which will grip the splints 17 nicely and will permit them to be ejected in the customary manner after they have been dipped. This arrangement enables the fingers to be made up very easily and to be
85 readily inserted in the slots of the plate 53, while at the same time by straddling the parts between the slots, the fingers are securely held in place. Moreover, the backs of the slots, that is the slot walls, serve to
90 stiffen the fingers.

Referring to Figs. 7 and 8, it will be seen that here we have shown plural rows of plungers 26 which are arranged at different elevations, the distance between the two
95 rows corresponding to the desired spacing of the match splints and to the distance between the rows of fingers 56 in the carrier plate 53. The guide plate 25 is of course shaped to receive the two rows of plungers
100 26, and the upper plungers coincide with the splint grooves 16^b in the hopper bed 15, while the lower plungers register with the lower portions of the grooves 16^a. Consequently, when the plungers are pushed forward by the mechanism already described,
105 they will push out two rows of splints and deliver the same into the grippers of the carrier plate.

In Figs. 5 and 6 is shown the arrange-
110 ment by which the product of several cutting machines can be delivered into the hopper 13. As illustrated, the cutting machines A and B can be of any approved type, and they are mounted on a floor 57 or equivalent
115 support, so that they will be above the hopper 13. Extending diagonally downward through the floor are supports 58, one being longer than the other, and they can conveniently be angle irons as shown in Fig. 6.
120 These, as illustrated, are stiffened by suitable braces 59 and 60. The longer supports 58 carry a chute 61, and the other braces carry a shorter chute 61^a. The longer chute takes the product from the machine A, and the
125 shorter chute takes the product from the machine B, and the chute 61^a is similar to the chute 61 and discharges into it. There is nothing novel about the construction of these chutes and they have the usual straightening par-
130

titions 62, but the arrangement of them and the means for oscillating them, is believed to be new. The chutes 61 and 61^a connect with their supports by links 63 so that they can be shaken, and any suitable means can be employed for doing this. To provide for shaking them together, likewise any suitable connections can be used, but as shown in Fig. 5, a bell crank 64 is pivoted on one of the supports 58, as shown at 65, and has one arm pivoted to the chute 61 while the second arm connects by a pitman 66 with a lever 67 which is pivoted to the shorter supports 58 as shown at 68, and also pivoted to the chute 61^a as shown at 69. Consequently the two chutes 61 and 61^a move together. The chute 61 thus delivers the splints from both machines straight in the hopper 13. A simple means is shown for shaking the chutes, although any suitable shaking means can be substituted. As shown, levers 70 are pivoted as shown at 72 to the lower ends of the long supports 58, and the levers are provided with counterbalancing weights 71, and one of them is pivoted at 73 to a pitman 74 which connects with an eccentric 75 on the shaft 22 (see Fig. 3).

From the foregoing description it will be seen that we have provided a very simple means for delivering the product of several splint cutting machines to a single hopper, and of rapidly and accurately discharging the splints from the hopper into the carrier. This arrangement makes a very rapid working machine, because where the splints are cut and delivered from the cutting mechanism to a carrier in the ordinary way, the capacity of the machine is limited to the

capacity of the cutter, and the machines are slower than they should be in operation, but by this arrangement, a great quantity of splints can be provided and rapidly fed in plural rows, if desired, into the carrier.

Attention is called to the fact that in this machine the hopper itself reciprocates over the grooved bed plate, and this is a distinct advantage because the bed plate is thus left stationary so that it is always in the right position with relation to its plungers, and to the carrier, and moreover, the reciprocating of the hopper shakes the splints, keeps them loose, and makes it certain that the grooves of the bed plate are filled.

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

1. A match machine comprising a splint carrier, a stationary bed plate having plural series of splint containing grooves therein, the grooves of the series being of different depths, a splint containing hopper reciprocating across the top of the bed plate, and plungers arranged in series to enter the aforesaid grooves and push the splints from the grooves into the carrier.

2. A match machine comprising a reciprocating splint containing hopper having means for supporting splints at different elevations, a splint carrier, and plungers arranged in series to push the splints into the carrier.

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