No. 865,592. PATENTED SEPT. 10, 1907.

W. F. HUTCHINSON.

MATCH MACHINE.

APPLICATION FILED SEPT. 20, 1906.

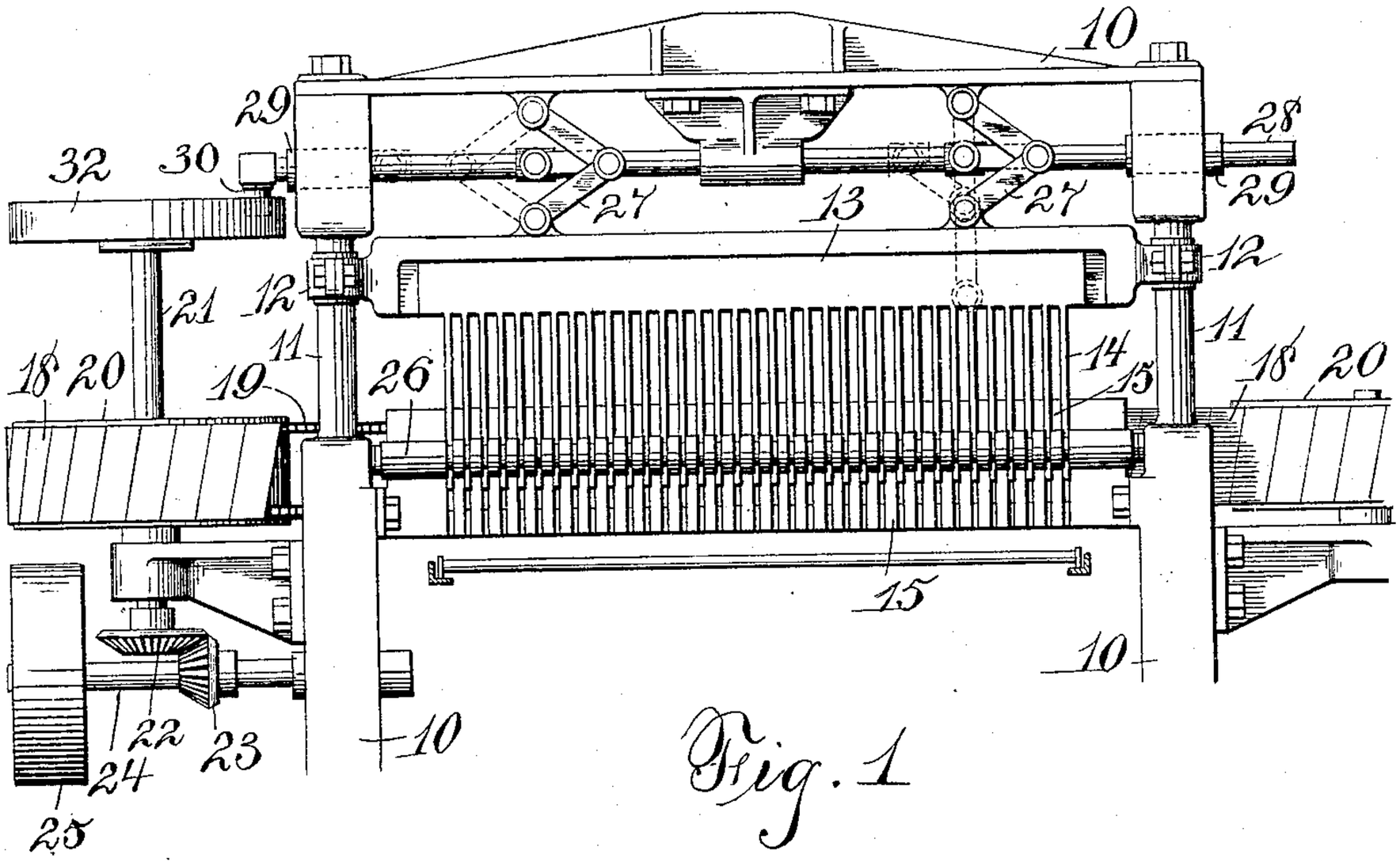

Fig. 1

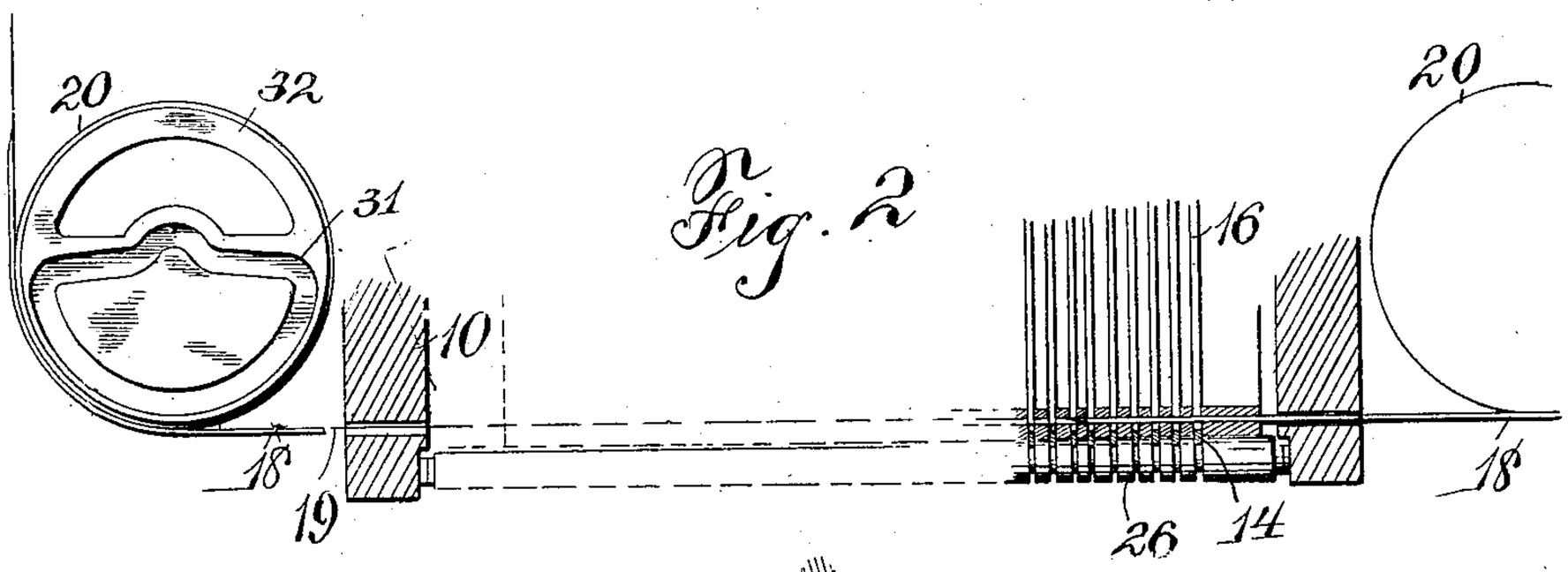

Fig. 2

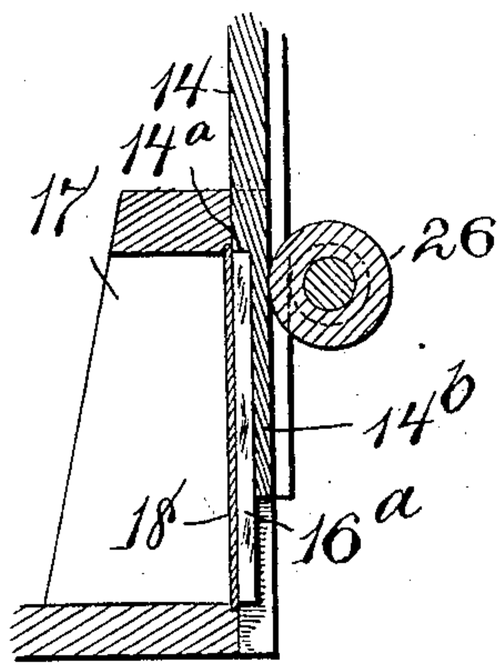

Fig. 3

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MATCH-MACHINE.

No. 865,592. Specification of Letters Patent. Patented Sept. 10, 1907.

Application filed September 20, 1906. Serial No. 335,501.

To all whom it may concern:

Be it known that I, WILLIAM F. HUTCHINSON, of Nyack, Rockland county, New York, have invented a new and Improved Match-Machine, of which the following is a full, clear, and exact description.

My invention relates to improvements in match machines, and is an improvement on the structure which is shown in my application for Letters Patent of the United States No. 245,661, allowed April 10th, 1906.

The general characteristics of my present invention are like those shown in the application referred to, but in practice I have found that I could improve the machine in certain details, and particularly as to the means for reciprocating the plungers which place the match splints in a carrier, and also the detail construction of the plungers. As heretofore made, the plunger mechanism of machines of this type has been rather slow and the plungers themselves have worked in connection with guide plates for the splints, said guide plates being in many instances movable, so that after the splints are driven the removal of the plate permits them to be carried forward by the carrier. In my present invention, I combine the functions of the guide plate and plunger so that the plate is dispensed with, and the plunger itself has a guiding device which enables it to strike the splint in such a way that the latter is driven straight, and obviously the withdrawal of the plunger withdraws the guiding device and leaves the splint free. These improvements enable me to run the machine much faster than could otherwise be done, and further, the construction is simple and enables the machine to be made cheaper than heretofore.

With these ends in view, and with the general object of producing a cheap, rapid and efficient match making machine, my invention consists of certain features of construction and combinations of parts which will be hereinafter described and claimed.

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

Figure 1 is a broken end view of the machine embodying my invention, parts being in section. Fig. 2 is a detail broken sectional plan, and Fig. 3 is a detail vertical section showing especially the construction of one of the plungers.

The machine has a suitable frame 10 of any approved design, and this is provided with a slide-way which is preferably in the form of the posts 11 which form a support for the boxes 12 of the cross head 13, and this carries the plungers 14, these being in detail claimed as a part of this invention. Heretofore plungers for ejecting match splints endwise have been constructed with essentially flat or square ends, but in this case I recess the top portion of each plunger, as shown at 14^a so that the top wall of the recess strikes the end of the match splint and the rear portion 14^b extends downward against one side of the splint, as shown in Fig. 3, and forms an efficient guide for the same. As in my former machine, the stock 16 is fed in the form of veneer strips between guide fingers 15 and between partitions 17 immediately in front of the guide fingers. The ends which are between the fingers are then cut by the knife or knives 18 so as to leave the splints between the said fingers and the knife will serve to hold in place on one side, the fingers two other sides, and the part 14^b of the plungers will secure the fourth side. In this way the descent of the plungers will push the splints endwise into the carrier below. I have not referred to this carrier in detail, as it can be of any of the well known kinds, and I also wish it understood that any usual form of cut off knife can be used without affecting the principle of the invention. As illustrated, the knives 18 are carried by chains 19 running over suitable pulleys 20 and one of these is shown secured to a shaft 21 which is mounted in suitable bearings at the side of the machine and connects by gears 22 and 23 with the driving shaft 24 which is driven by a pulley 25 or an equivalent driving means. This arrangement causes the knives 18 to pass successively through the stock 16 and a whole series of the stock strips is fed forward between the successive knives, as shown in my former application. In order that the plungers 14 may have the strain removed from them as much as possible, and to prevent them from being bent, or from wabbling, I use a plunger guide 26 preferably in the form of a roller, and which is arranged opposite the series of plungers and grooved so that the plungers can fit in said grooves, as shown best in Fig. 2.

My invention comprises an improved scheme for working the cross head 13 so that it will move rapidly and easily, and to this end the cross head is supported by toggle levers 27, which are pivoted respectively to the cross head, and to the frame 10 above, and these levers are pivoted at the elbow to a slide rod 28 which moves in boxes 29 and which at one end connects by means of a roller 30 with the cam groove 31 in the cam 32, which is secured to the shaft 21, though obviously it can be driven in any suitable way. The arrangement shown, however, is compact and enables the cam and the knives 18 to be easily operated from the same shaft. It will be seen that the cam groove 31 is nearly semicircular, and this causes the shaft 28 to move relatively slow in one direction, and to move very

quickly in the opposite direction, so that it causes the cross head 13 to rise gradually and then move sharply down, thus enabling the plungers to act on the splints 16ª (see Fig. 3) in a way to force them into the carrier below.

I have made no attempt to show a complete match machine because this machine is like the one referred to above except for the improvements in the plunger mechanism, and the means for operating the said mechanism.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent,—

In a match machine, the combination of the reciprocating plungers and the grooved guide roller engaging the plungers, said plungers being recessed to engage the splints on one side, said plungers being held up to position by the grooved roller engaging the sides of the plungers opposite the recessed side.

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