

924,190.

FIG. 1.

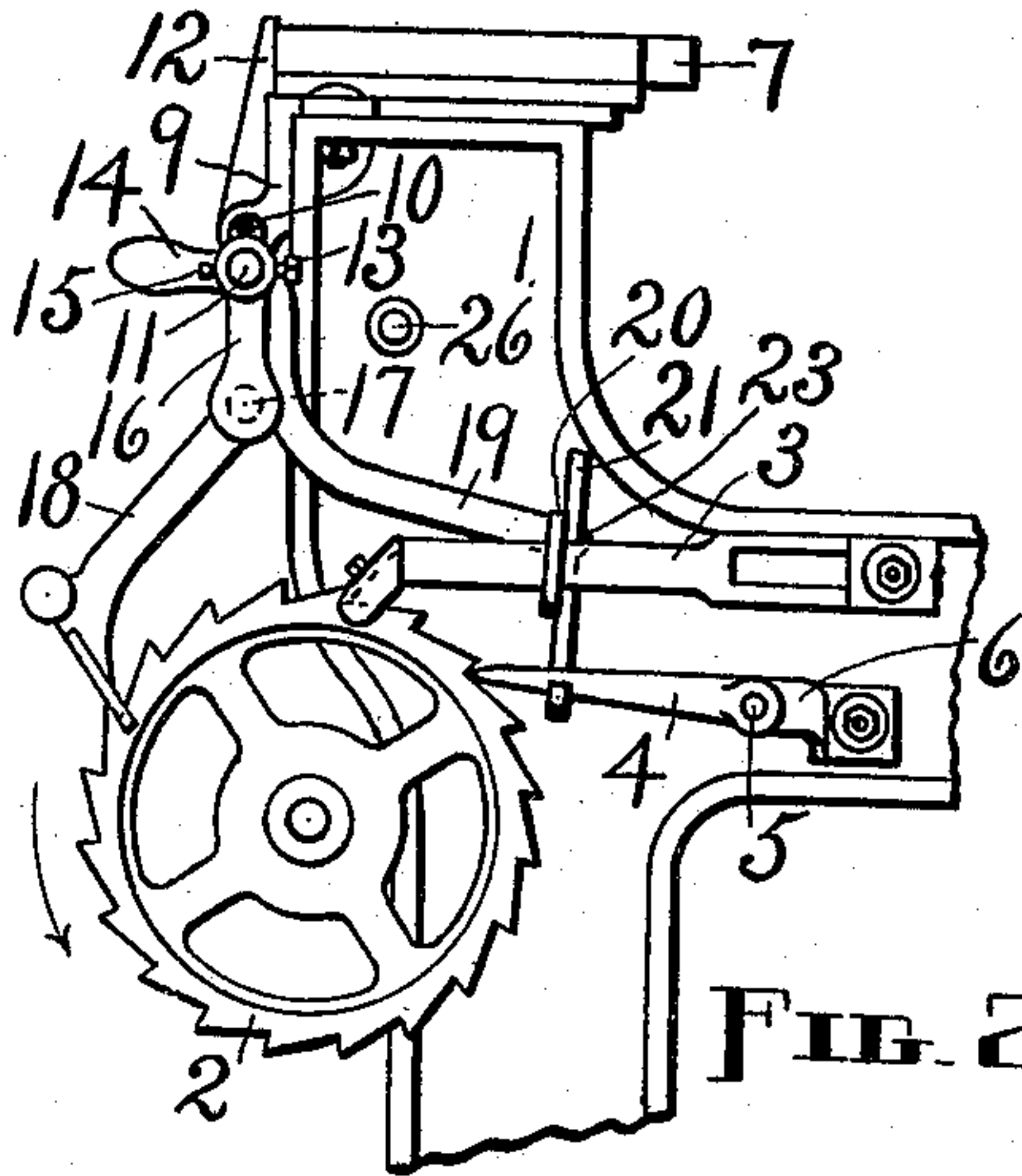


FIG. 2.

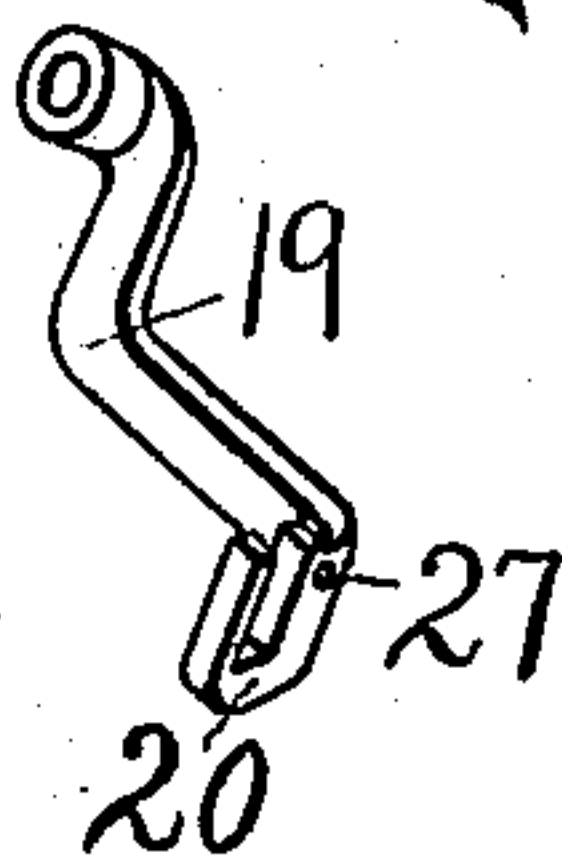


FIG. 3.

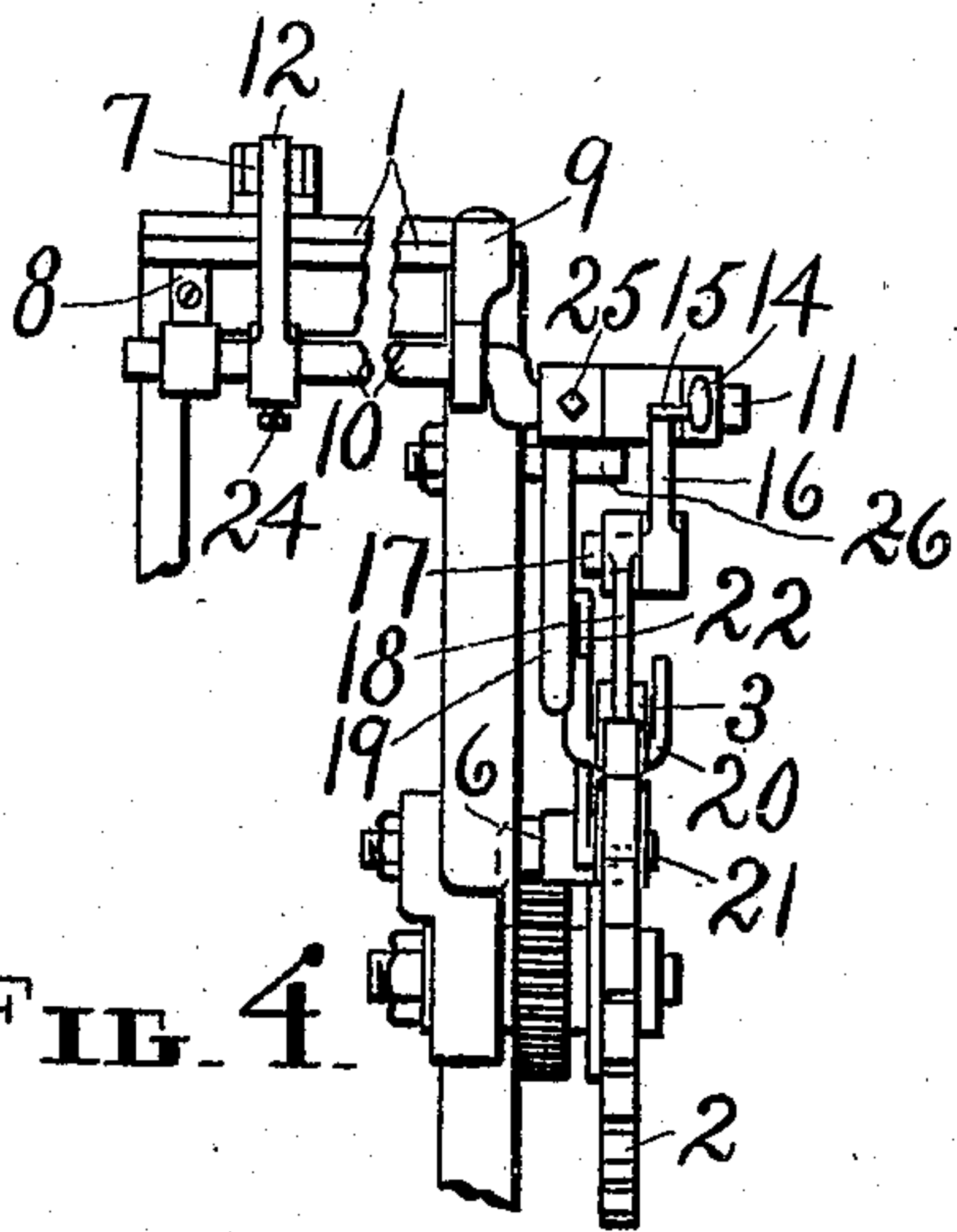


FIG. 4

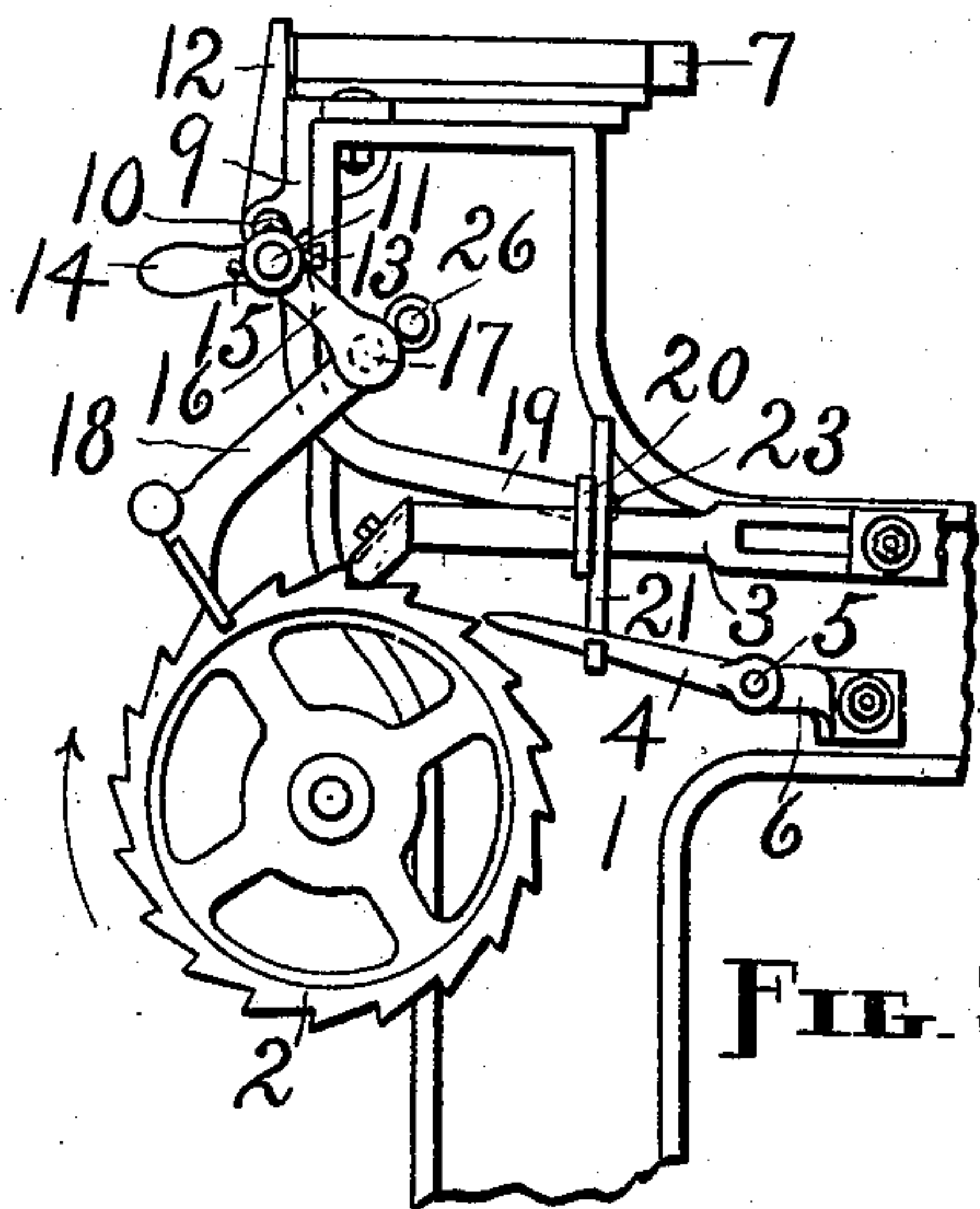


FIG. 5

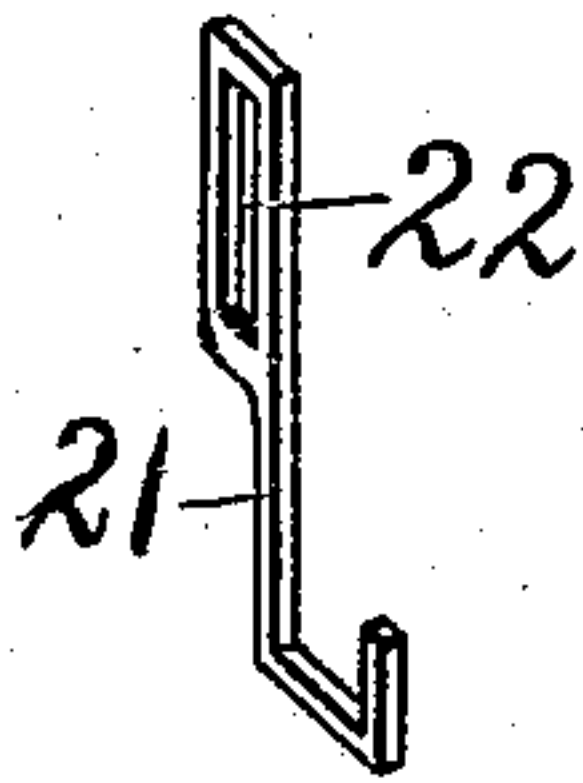


FIG. 6.

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UNITED STATES PATENT OFFICE.

JEROME T. RUTLEDGE, OF EASTHAMPTON, MASSACHUSETTS.

THIN-PLACE PREVENTER FOR LOOMS.

No. 924,190.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed August 27, 1908. Serial No. 450,462.

To all whom it may concern:

Be it known that I, JEROME T. RUTLEDGE, a subject of the King of Great Britain, residing at Easthampton, in the county of Hampshire and State of Massachusetts, have invented new and useful Improvements in Thin-Place Preventers for Looms, of which the following is a specification.

My invention relates to improvements in devices used in connection with the take-up mechanism and the filling-fork mechanism of looms, in which I provide certain peculiar means, controlled by the filling-fork mechanism of the loom, to throw out the take-up pawl and detent and to let back the take-up ratchet-wheel of said loom a predetermined number of teeth, when the filling runs out, and to restore the take-up mechanism to normal condition and action upon restarting the loom, after the filling has been replenished, all as hereinafter set forth.

The object of my invention is to provide automatic means for preventing the formation of thin places in cloth while being woven on a loom, at such times as the filling runs out, such means being certain and efficient, capable of attachment to almost any loom, and particularly adapted for use with a take-up ratchet-wheel having coarse teeth, although the new mechanism will work equally well with a ratchet-wheel having fine teeth. Other let-back devices have been made which are adapted for fine toothed ratchet-wheels only, they being entirely inapplicable to the other kind, hence in this particular, namely, the adaptability of my mechanism to coarse toothed ratchet-wheels, resides one of the important advantages of my invention. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a preferred form of my mechanism as applied to a loom, so much of the frame, the take-up mechanism, and the filling-fork mechanism of the loom being shown in this and the other three general views as is necessary to fully illustrate the practical application and operation of the new mechanism; Fig. 2, a right-hand end view of the parts shown in Fig. 1; Fig. 3, a perspective view of the lifter; Fig. 4, a front elevation of the aforesaid applied mechanism; Fig. 5, an end elevation similar to Fig. 2 excepting that the parts are abnormally displaced, and, Fig. 6, a perspective view of the stirrup for the take-up detent.

Similar figures refer to similar parts throughout the several views.

1 represents a portion of a loom frame, suitably mounted on one end of which is an ordinary take-up ratchet-wheel 2 driven in the direction of the arrow in Fig. 2, under ordinary conditions, by means of the usual take-up pawl 3. A detent 4, for the ratchet-wheel 2, is pivoted at 5 below the pawl 3 to a bracket 6 made fast to the end of the frame 1. On the top of the frame 1, near the end opposite that which carries the take-up members, is a slide 7 which forms part of the filling-fork mechanism.

With the exception of the detent 4, which is somewhat different from the old take-up detent, the above-mentioned parts are old and well-known, and the operation of all of these parts is so generally understood by those skilled in the art as to need no detailed description beyond what will be given hereinafter in connection with the description of the operation of the new mechanism, the construction of which latter will next be described.

Rotatably supported in bearing brackets 8 and 9 is a shaft 10 having one end off-set downward to form a crank 11 in the present instance. This cranking of the shaft 10 is not always necessary, but is resorted to for the purpose of permitting the desired amount of motion to be imparted to the parts mounted on said shaft at this end without requiring that the shaft be rotated so much as it would have to be in the event that the shaft were left straight throughout. Since the shaft 10 is rotated or in reality only partially rotated by the slide 7, the amount of such partial rotation naturally must be slight because the amount of movement of said slide is small. The slide 7 actuates the shaft 10 through the medium of an arm 12 which is fast to and rises from said shaft in front of said slide. The brackets 8 and 9 are fastened to the frame 1 and so located as to position the shaft 10 in front of said frame near the top, with its crank 11 extending beyond the right-hand end of the frame over the ratchet-wheel 2.

Mounted on the crank 11 and adjustably secured thereto by means of a set-screw 13 is a handle 14 provided with a stop-pin 15. The handle 14 projects forwardly, and the pin 15 extends laterally from the inner side of said handle. Loose on the crank 11, inside of the handle 14, is a downwardly-ex-

tending arm 16 provided at its lower end with a pivot pin 17 which is on the inside. A let-back detent 18 has its upper end loosely mounted on the pin 17, while its lower end
 5 engages the teeth of the ratchet-wheel 2 forward of a vertical line passing through the center thereof. Tight on the crank 11, inside of the arm 16, is an angular lifter 19 terminating at the end opposite that which is
 10 mounted on said crank in a stirrup 20. The lifter 19 extends downward and rearward and its stirrup 20 receives the pawl 3. A stirrup 21, for the detent 4, is slotted at 22 to receive a set-screw 23 by means of which
 15 said stirrup is secured to the rear end of the lifter 19. The slot 22 in the stirrup 21 enables said stirrup to be adjusted. The construction and arrangement of parts are such that the stirrup 20 is over the stirrup 21, that
 20 is to say, the former is above the horizontal plane of the latter. The arm 12 and the lifter 19 are rendered adjustable by means of set-screws 24 and 25, respectively.

A stop-pin 26 projects outward from the
 25 frame 1, at the end to which the arm 16 is adjacent, into the path of travel of the base of such arm.

In Fig. 3 the hole in the lifter 19 for the set-screw 23 is shown at 27.

30 Assuming that the parts are normally disposed, as best shown in Fig. 2, the operation of the mechanism is as follows: The ratchet-wheel 2 is operated in the usual manner by the pawl 3 assisted by the detent 4, one
 35 ratchet-tooth after another passing beneath the detent 18 which is loosely pivoted to the arm 16 and so offers no resistance to said wheel while rotating in the direction of the arrow in Fig. 2, until such time as the filling
 40 becomes exhausted, when the filling slide 7 is actuated forward to stop the take-up mechanism and let back the ratchet-wheel one, two, or more, usually two, teeth, representing a corresponding number of picks or
 45 filling threads which, in the absence of the let-back mechanism would be left out of the fabric being woven. In other words, one or more threads would be left out because the ratchet-wheel 2 is certain to run over or to
 50 make a part of a revolution after the filling-fork mechanism is set in operation, so that one or more pulsations are given to said wheel before the throw-out for the take-up operates effectually. With my mechanism
 55 this lost motion is taken up and so the formation of a thin place in the cloth is prevented, the latter being due to the fact that the new filling can be started in exactly where the old filling left off.

60 Considering the operation in detail, it will be observed that, when the slide 7 moves forward, said slide rocks the arm 12 in the same direction and with it the shaft 10. This partial revolution of the shaft 10 imparts an
 65 upward movement to the lifter 19, which is

sufficient to raise the pawl 3 and the detent 4 out of engagement with the ratchet-wheel 2. By this time the ratchet-wheel 2 has run over, say two teeth, corresponding to two
 70 picks, but this over-run is immediately retracted by the reversal of said wheel and the backward partial rotation of the same as far as the detent 18 and the arm 16 will permit, or until said detent and arm are checked by
 75 the stop-pin 26 with which the arm now contacts. The amount of this let-back is regulated by the handle 14 in the manner presently to be described. The backward movement on the part of the ratchet-wheel, or the
 80 movement indicated by the arrow in Fig. 5, results from the usual tension to which said wheel is constantly subjected. The parts now stand as shown in Fig. 5.

After replenishing the filling the slide 7 is withdrawn from its forward position. Such
 85 withdrawal releases the arm 12 and incidentally permits the members directly displaced thereby to assume under the force of gravity their former and normal positions. The ratchet-wheel is thus once more re-
 90 stored to the control of the take-up pawl and detent and impelled by the former begins its forward rotation. When the ratchet-wheel resumes its regular rotation it carries the
 95 detent 18 and arm 16 forward, gravity assisting, until said arm strikes the stop-pin 15. The arm 16 is checked by the stop-pin 15, and then the detent 18 is held by said arm in readiness to stop the ratchet-wheel again
 100 when it is let back in the manner already fully explained. By loosening the set-screw 13, rocking the handle 14 on the crank 11, and then retightening said set-screw, the
 105 position of the stop-pin 15 can be so changed as to check the arm 16 at any desired point and so set the detent 18 for an over-run and let-back of any number of teeth of the
 110 ratchet-wheel that is practicable; that is to say, the amount of forward swing of said arm is determined by the position of said handle and its stop-pin, and this fixes the forward
 115 movement of said detent and determines whether it shall at the end of such movement engage or be in engagement with the first, second, third, or fourth tooth on the ratchet-wheel which is ahead of the point where the
 120 detent stops the tooth engaged thereby when itself stopped in its backward movement by the encounter of the arm 16 with the stop-pin 26.

Minor changes in details of construction, such as will readily occur to one skilled in the art as well as such as may be required to adapt the improved mechanism to different
 125 looms, may be made in such mechanism without departing from the nature of my invention, and, of course, the shape and size of some or all of the parts will vary more or less.

I claim—

1. A thin-place preventer, for looms, com- 130

prising a suitably supported rock-shaft, an operating member for the latter, a lifter tight on such shaft, an arm loose on such shaft, a let-back detent pivotally connected with said arm, and stops arranged to limit the movement of the arm in both directions.

2. A thin-place preventer, for looms, comprising a suitably supported rock-shaft, an operating member for the latter, a lifter tight on such shaft, an arm loose on such shaft, a let-back detent pivotally connected with said arm, a stop arranged to limit the movement of the arm in one direction, and a stop carried by said shaft to limit the movement of the arm in the other direction.

3. A thin-place preventer, for looms, comprising a suitably supported rock-shaft cranked at one end and provided with an operating member, a lifter tight on such cranked end, an arm loose on said end, a let-back detent pivotally connected with said arm, a stop arranged to limit the backward movement of the arm, and a stop arranged to limit the forward movement of the arm.

4. A thin-place preventer, for looms, comprising a suitably supported rock-shaft cranked at one end and provided with an operating member, a lifter tight on such cranked end, an arm loose on said end, a let-back detent pivotally connected with said arm, a stop arranged to limit the backward movement of the arm, and a stop carried by said cranked end to limit the forward movement of the arm.

5. The combination, in a loom, with a take-up ratchet-wheel, pawl and detent, and a movable member of the filling-fork mechanism, of a suitably mounted rock-shaft provided with an arm arranged in operative relation to said filling-fork member, a lifter tight on such shaft and provided with engaging members for said pawl and detent, an arm loose on said shaft, a let-back detent pivotally connected with such loose arm, said last-mentioned detent being in engagement with said ratchet-wheel, a stop arranged to limit the backward displacement of the let-back-detent arm and its detent together with the ratchet-wheel, and a stop carried by said shaft to limit the forward movement of said let-back detent arm.

6. The combination, in a loom, with a take-up ratchet-wheel, pawl and detent, and a movable member of the filling-fork mechanism, of a suitably mounted rock-shaft provided with an arm arranged in operative relation to said filling-fork member, a lifter tight on such shaft, such lifter having a stirrup at its free end for said pawl, a stirrup adjustably attached to said lifter for said detent, an arm loose on such shaft, a let-back detent pivotally connected with such loose arm, said last-mentioned detent being in engagement with said ratchet-wheel, a stop arranged to limit the movement of the let-back detent and its supporting arm when actuated backward by the ratchet-wheel, and thus to check further backward movement of the latter, and a stop to limit the forward movement of the arm.

7. The combination, in a loom, with a take-up ratchet-wheel, pawl and detent, and a movable member of the filling-fork mechanism, of a suitably mounted rock-shaft provided with an arm arranged in operative relation to said filling-fork member, a lifter tight on such shaft and provided with engaging members for said pawl and detent, an arm loose on such shaft, a let-back detent pivotally connected with such loose arm, said last-mentioned detent being in engagement with said ratchet-wheel, a stop arranged to limit the backward displacement of the let-back-detent arm and its detent together with the ratchet-wheel, and a stop carried by said shaft to limit the forward movement of said let-back detent arm.

JEROME T. RUTLEDGE.

Witnesses:

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A. C. FAIRBANKS.