

(No Model.)

3 Sheets—Sheet 1.

E. M. WILCOX.
ATTACHMENT FOR ENVELOP MACHINES.

No. 587,898.

Patented Aug. 10, 1897.

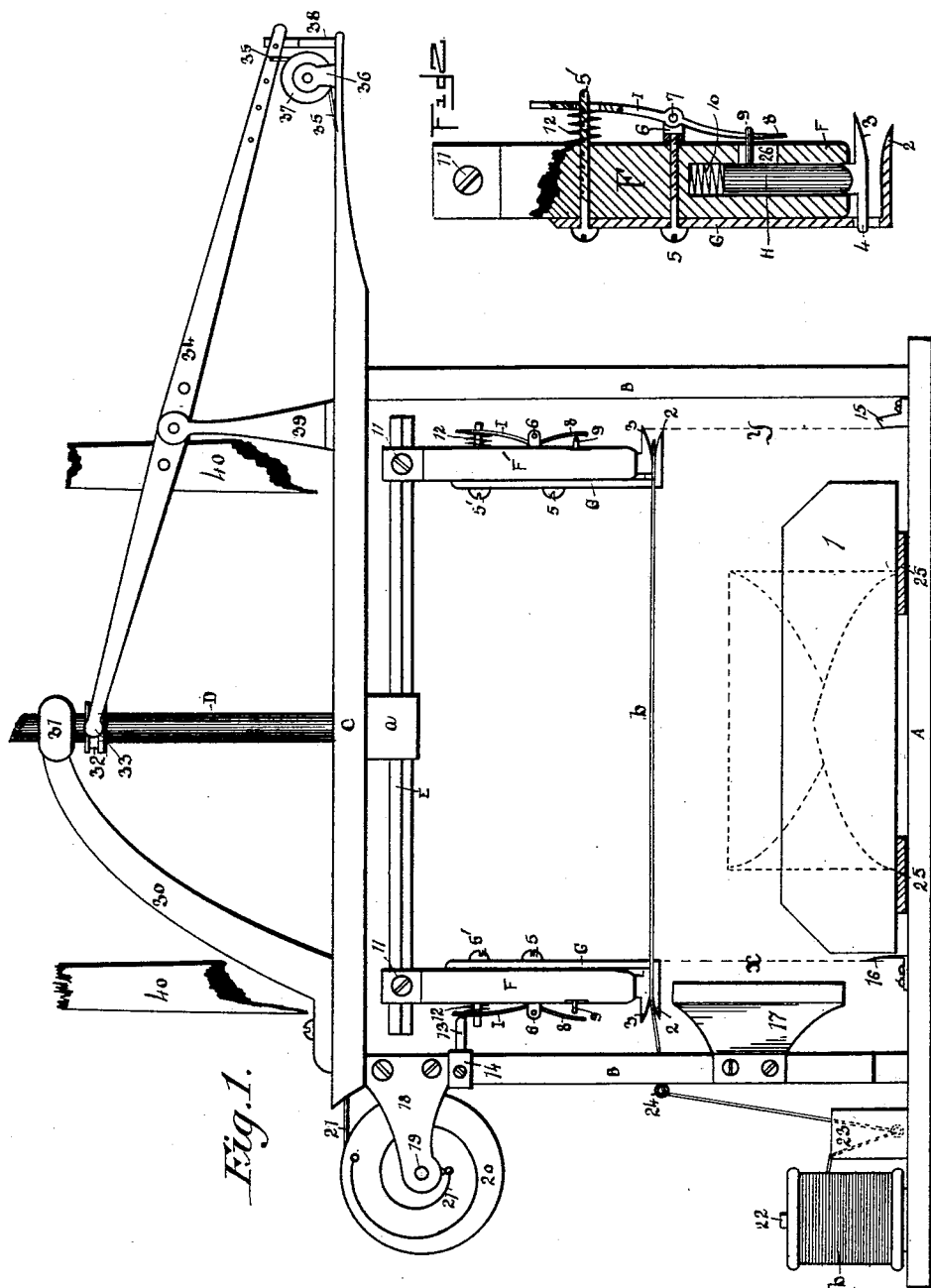


Fig. 1.

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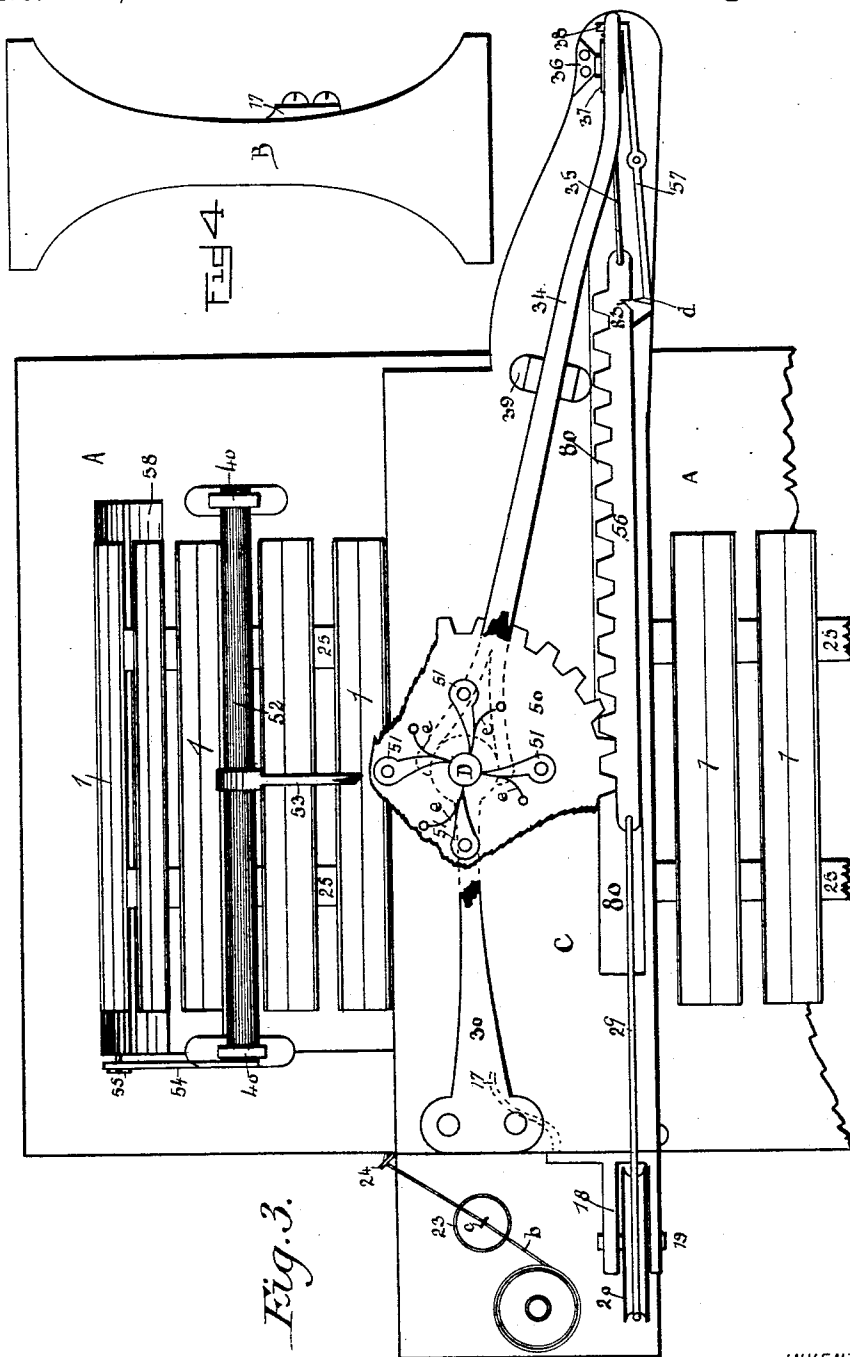


Fig. 3.

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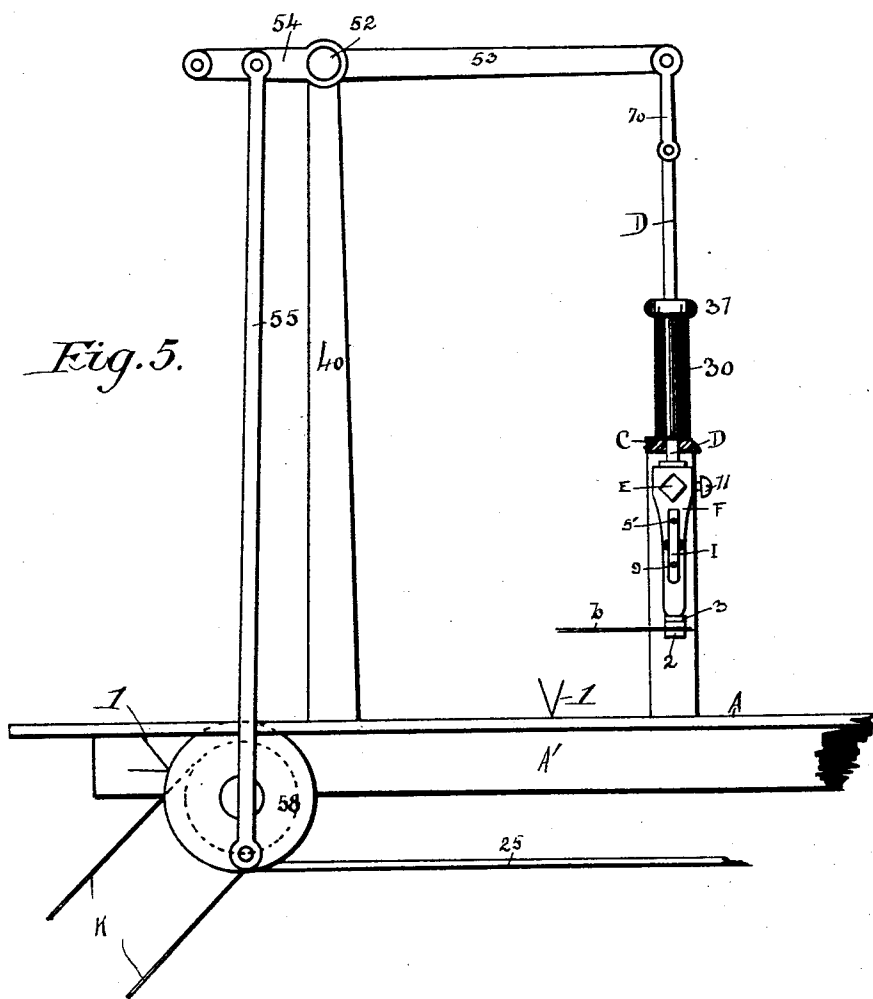
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Patented Aug. 10, 1897.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR ENVELOP-MACHINES.

SPECIFICATION forming part of Letters Patent No. 587,898, dated August 10, 1897.

Application filed February 3, 1897. Serial No. 621,863. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. WILCOX, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain useful Improvements in Attachments for Envelop-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to an improvement in attachments for envelop-machines.

The object of my invention is to provide a simple mechanism adapted to be used in conjunction with the drying-carrier of any suitable envelop-machine for the purpose of placing an opening-strand in the sealing-flap of the finished envelop.

Briefly my invention embraces a set of revolving strand or thread grippers which are adapted to continuously hold and engage a suitable strand or thread as it passes out of a gumming-bath to be placed in the crease of the sealing-flap of a finished envelop after the envelop has been placed in the drying-carrier, the thread after being placed in an envelop being severed in measured lengths, but the supply-thread being continuously engaged by one of the grippers as used in my invention.

In the accompanying drawings, Figure 1 shows an end view, with portions broken away, of my invention, showing the thread in position and an envelop in the drying-carrier in dotted lines. Fig. 2 shows an enlarged partly-sectional view of one of the adjustable grippers as used in my invention. Fig. 3 shows a top view with portions broken away, more clearly disclosing the method of operating the gripper-shaft. Fig. 4 shows an end view of one of the supporting-brackets, while Fig. 5 shows a broken detached detail disclosing the position of the plunging gripper-shaft in its relation to the drying-carrier, with a suitable envelop.

My invention embraces a thread or strand laying mechanism which is intended to be used in conjunction with an envelop-machine and to be operated above the drying-carrier of the envelop-machine, so that the finished envelops as they leave the machine are pro-

vided with an opening strand or thread without interfering or retarding the operation of the envelop-machine in itself, so that when the envelops reach the end of their journey in the drying-carrier they are ready to be packed, with the opening-strand properly placed and without having interfered in any way with the speed or operation of the envelop-machine proper.

In order to manufacture ordinary commercial envelops in paying quantities, it is found that at least a hundred per minute must be manufactured to operate a machine to commercial advantage, and with this end in view I have constructed a thread-placing mechanism adapted to work as fast and in unison with the envelop-machine to which it is to be attached, and my thread-laying mechanism is further arranged so that it can be instantly adjusted either to a long or short envelop, as will be described more fully hereinafter.

In the accompanying drawings, A represents a table of any suitable envelop-machine over which a drying-carrier comprising the holder 1 and the endless belts 25 25 are made to pass in the manner usual to this class of inventions. At a suitable point above this drying-carrier I place my mechanism, which embodies the plunging and revolving gripper-shaft D, which is revolubly supported within the top plate C, this plate in turn being given suitable support by means of the terminal brackets B B, and these brackets forming a striding-frame, between which the drying-carrier of the envelop-machine is positioned.

The shaft D is provided with a suitable head *a*, secured to the lower end thereof and within which head is held a supporting-bar E, which bar can be of any suitable cross-section, but in the drawings being shown as square. Working upon this bar E are two grippers, which grippers embody a stock F, provided below and centrally with an opening adapted to hold the plunger H, which plunger is provided below with a thread-engaging head 3 and on one side to the rear with a heel 4. Communicating with the plunger-opening is an auxiliary opening 26, as is shown in Fig. 2, within which opening is nicely held a pin 9, forming part of the plunger H, and above and working against this plunger H, within this opening, is a spring 10,

so that this plunger H is normally forced in a downward or locked position to bind against the shoe 2, which is secured by means of the angular portion G to the stock F, being provided with a suitable opening adapted to accommodate the heel 4, as is shown in Fig. 2. Positioned upon the same side with the projecting pin 9 is an ear 6, provided with a pin 7, supporting a lever I, which lever is provided with a lower curved portion 8, having an eye-opening therein adapted to engage the pin 9 when said plunger is in its upward position and working against the tension of the spring 10, as is shown in Fig. 2. This lever I is guided at its upper end by means of the projecting stem of the supporting-screw 5', which also aids in securing the stop-plate 2 to the gripper-stock F, a spring 12 further being positioned between the gripper-stock F and the lever I, so that this lever has its lower end normally forced upon the pin 9.

The supporting-ear 6 is held by means of a screw 5, which also aids in supporting the stop-plate 2. Above each gripper is provided with an opening, so as to nicely accommodate the supporting-bar E, and being further provided with a set-screw 11, so that these grippers F may be positioned adjustably at any suitable point upon the bar E, their position being determined by the length of the envelop into which the opening-strand is to be placed.

Working within a slot 80, within the upper plate C, is a sliding rack 56, which rack is provided at one end, referring now to Fig. 3, with the strand 29, which works upon the spring-actuated roll 20 in such a manner that this rack 56 is normally drawn in the direction of the roll 20, which roll is wound forward by means of the spring 21. At its opposite end this rack 56 is provided with the strand 35, which works over the pulley 37, supported by means of the ear 36, the strand finally being secured to the lever 34, which lever is supported by means of the standard 39.

Secured to the shaft D, as will be noticed in referring to Fig. 1, is a grooved collar 32, which is adapted to accommodate the bifurcated end 33, as is shown in dotted lines in Fig. 3, in such a manner that while the shaft D works downward it is permitted a movement within the bifurcated end of the lever 34. Working about the shaft D, as is shown in Fig. 3, is an ordinary spur-gear 50, which gear is provided with a series of pawls 51, spring-actuated by means of the springs *e*, and are adapted to impinge against the shaft D to revolve the same whenever said gear is turned in one direction. When the gear turns in its opposite direction, the pawls do not engage the shaft D, so that the same is not revolved.

The arrangement so far described would embody the primary working mechanism, which would operate as follows: The shaft D would be made to reciprocate in a vertical

plane by any suitable mechanism in time with the capacity of the envelop-machine, there being one downward plunge of this shaft D to every envelop made, so that if the capacity of an envelop-machine would be one hundred and ten envelops per minute this shaft would have to make one hundred and ten downward plunges in order to work in conjunction with said machine. Now as the shaft D would be carried downward it would raise the rear end of the lever 34 to draw the strand 35 upward, and this upward drawing of the strand 35 would draw the rack 56 forward, and as this rack was drawn forward the spur-gear 50 would be revolved by virtue of this rack 56, while at the same time the shaft D would be descending and slipping below the pawls 51. To prevent the rotation of this shaft D, I provide a guide-plate 17, as is noticed in Fig. 1 and is shown in dotted lines in Fig. 3, against which one of the grippers would be carried and upon which it would slide as the two grippers would be carried downward as well as during the upward stroke of the shaft D; but during this upward movement of the shaft D the strand 35 would work slack, so that said spring-actuated roll 20 would exert a spring-pressure upon the rack 56 to revolve the spur-gear 50, in which condition the pawls 51 would bind and impinge upon the shaft D to revolve the same. However, the guide-plate 17 would prevent this movement until the shaft D were carried high enough to escape the same, when the shaft would be revolved a half-revolution by means of the spring-roll 20, so that the gripper which had been riding against the guide-plate 17 would come upon the side opposite and the opposite gripper coming above and adjacent to said shield, so that this shaft and its connected grippers is intermittently revolved a half-revolution at each upward plunge of the shaft D.

To hold the rack 56 and so the spur-gear, and consequently the shaft D, in proper position during the upward movement of the shaft D, I provide this rack 56 with a notch 83, into which the hooked end *d* of the pivoted lever 57 is adapted to work, so that whenever this rack 56 is drawn forward the catch *d* rides into this notch to hold this rack in a locked position. However, as the lever 34 would descend it would finally engage the upper extension 38 of this lever to carry said hook *d* outward, permitting a prompt escape of the rack 56 to bring about this intermittent half-revolution of the gripper and connected shaft.

As has been described, the gripper-heads 3 are normally in a downward or locked position upon the stop-plate 2, while the lever I is normally forced outward by means of the spring 12 to ride upon the pin 9. Now in starting the machine a strand, as *b*, for instance, (see Fig. 1,) is carried over an ordinary spool working upon a shaft 22 through a gumming-bath held within a vessel 23, within the bottom of which is positioned an eye *c*, as is shown

in Fig. 3, and is then carried between the stop-plate 2 and gripper-jaw 3, referring now to Fig. 1, and from thence in its moist and gummed condition is carried to the opposite gripper, in which case the last-named gripper (marked F' in Fig. 1) has its spring I depressed, permitting the head 3 to bound forward and impinge the thread upon the stop-plate 2, in which condition it is securely held. Upon the opposite side a like result would have been accomplished by means of the projecting pin 13, which pin is held within the path of the levers I and upon that side is always made to engage this lever, so that the head 3 will lock upon its shoe and so clamp the thread or strand *b* upon that side. Now in referring to Fig. 1 it will be noticed that in following the line *x* a knife is disclosed which would come at a point adjoining the stop-plate 2 upon that side, while upon the side opposite, following the line *y*, a striker 15 is positioned, which striker is made so that it engages the projecting head 3 of the gripper F', and it should here be stated that the head 3 projects slightly beyond the stop-plate 2, as also shown in Fig. 2. Now both these heads are locked upon the strand *b*, which is held in a taut condition and, as stated, in a moist gummed condition. The strand would then be carried downward by the shaft D into a proper-sized envelop, which would be carried forward in the drying-carrier 1 with the opening flap open and below, as is usual in envelop-machines. Now as the grippers descend the thread would be placed within the crease of the opening-flap of the envelop and an instant afterward the knife 16 would sever the thread or strand *b*, while upon the opposite side the striker 15 would have engaged the head 3 to carry the same forward, so that the pin 9 would lock into the opening within the end 8 of the lever I to lock the same in an open position, as is disclosed in Fig. 2, so that the grippers would be carried backward with the strand still securely held within the gripper F, while the gripper F' would rise in an open condition. As the frame would then be swung around the half-revolution, the thread *b* would of course be carried forward moist and gummed, as stated, by the gripper F, so that the open gripper F' would come within the line of the thread, which would be positioned so that it would come square between the open head 3 and the stop-plate 2 until the pin 13 encountered the lever I, when the plunger-head 3 would be permitted to pound down upon the thread, the whole being almost simultaneously carried downward to again place the second strand within the second envelop, and this operation would of course be continued indefinitely. By this means it will be noticed that while the frame and connected grippers is intermittently revolved a half-revolution the opening thread *b* is continuously held and engaged by one of these grippers.

In the drawings, referring to Fig. 5, I have shown a broken series of drying-carriers 1 1.

The roll over which these carriers pass is provided with a suitable mechanical movement 58, of any approved form, by means of which a reciprocating movement may be imparted to the rod 55 to actuate the grippers. This mechanical movement forms no part of my invention. This movement is further actuated by a belt 25 and is provided with a rod 55, which rod above engages a stub-arm 54, forming part of the shaft 52, which shaft is supported by the standards 40 and is provided with a central arm 53, to which a toggle 70 is secured, which toggle in turn engages the bar D, the whole mechanism of course being so timed that there is one plunging movement of the shaft D to every one of the drying-carriers.

I do not wish to confine myself to any sort of actuating mechanism, as this mechanism may have to be varied to conform to the structural peculiarities of the different machines in connection with which my attachment is to be used, the aim and object, as has been stated, being more particularly to provide what might be aptly termed a "strand-feeder" to be used in conjunction with the drying-carrier of any suitable envelop-machine.

Now, having thus described my said invention, what I claim as new, and desire to secure by United States Letters Patent, is—

1. A strand-feeder for envelop-machines comprising means for supporting envelops, a guide for the strand, a shaft having intermittent rotary and longitudinal movements, a pair of grips which are moved by the shaft's rotation across the line of feed of the strand, and means for severing the strand at a point between the grips and adjacent to that grip which is nearest the guide for the strand, so that the end of the strand is always retained by one of the grips after the piece is severed; substantially as set forth.

2. The combination with an intermittently-revolving shaft of carriers adjustably secured to said shaft, and gripper-jaws secured to said carriers adapted to open and close in releasing and engaging a strand.

3. The combination with a suitable support of plunging gripper-jaws, said jaws being normally closed to carry a strand, mechanism to revolve said grippers in a plane at right angles to the plunger-path of said grippers, and a gripper-opener positioned within the plunger-path of said jaws to open one of said jaws at a predetermined point.

4. The combination with two grippers revolving about a common center, said grippers being normally closed to carry a strand, of an operating mechanism adapted to open one of said grippers at a predetermined point, and a closing mechanism positioned within the path of said jaws to close said opened gripper.

5. The combination of two grippers positioned opposite one another, and revolving about a common center, both of said grippers being normally closed to carry an opening-strand, means for opening one of said

grippers at a predetermined point so as to release said strand, and a cutter positioned between said grippers to cut said strand into predetermined lengths, the supply end of said strand being continuously engaged by one of said grippers.

6. The combination with two grippers revolving about a common center, adapted to receive a strand, a striker positioned at a predetermined point in the path of said revolving grippers, a cutter positioned approximately opposite said striker and between said grippers, and means to bring said cutter and striker adjacent to said grippers to cut a strand-section of a length less than the distance between said grippers and simultaneously open one of said grippers to release said severed strand-section.

7. A strand-gripper working in a circular path, mechanism to reciprocate said gripper in a lineal path at right angles to said circular path, means for closing said gripper at a predetermined point in its circular path, and means for opening said gripper at a predetermined point in its lineal path, so that said gripper travels alternately in an open and closed condition.

8. The combination with a plunger-shaft, of grippers secured to said shaft adapted to work in a circular path, said grippers being closed in their upper position, and a striker to open one of said grippers when said plunger-shaft carries said grippers into its lower position.

9. The combination with a shaft of a plunger mechanism to lower and raise said shaft, a clutch-gear upon said shaft to revolve the same in one direction, a rack meshing with said clutch-gear, and means connecting said rack to said plunger mechanism.

10. The combination with a shaft, a plunger mechanism to lower and raise said shaft, mechanism to rotate said shaft after it has been lowered and raised, strand-grippers secured to said shaft, means to open one of said grippers while said shaft is in its depressed position and mechanism to close said open gripper.

11. The combination with a shaft, strand-grippers secured to and revolving with said shaft, means to plunge said shaft downward, both of said grippers being closed while being carried downward, a striker to open one of said grippers in its downward movement, mechanism to carry said shaft upward and mechanism to rotate said shaft at the conclusion of its upward movement.

12. The combination with a shaft, strand-grippers secured to and revolving with said shaft, means to plunge said shaft downward, both of said grippers being closed while being carried downward, a striker to open one of said grippers in its downward movement, mechanism to carry said shaft upward, means to rotate said shaft at the conclusion of its upward movement and a second striker to close said open gripper.

13. The combination with a plunger-shaft, of a clutch-gear surrounding said shaft, a rocker-bar secured to said shaft, a rack meshing with said clutch-gear and connected to said rocker-bar, and a spring to normally draw said rack in one direction.

14. The combination with a plunger-shaft, of a clutch-gear surrounding said shaft, to revolve said shaft in one direction, a rocker-bar actuated by said plunger-shaft, a rack meshing with said clutch-gear and connected to said rocker-bar, a stop to prevent said shaft from revolving after having passed a predetermined point and a spring to normally force said rack in one direction.

15. The combination with a plunger-shaft, of mechanism to reciprocate said shaft, a rocker-bar secured to said shaft, a clutch-gear secured to said shaft to actuate said shaft in one direction, a rack meshing with said gear and connected to said rocker-bar, a spring to hold said rack under tension, a carrier secured to said plunger-shaft and a guide to prevent the rotation of said carrier while reciprocating in its plunger movement for a predetermined distance, said carrier after leaving said guide being permitted a rotary movement.

16. The combination with a plunger-shaft, a rocker-bar secured to said shaft, a clutch-gear secured to said shaft, a rack meshing with said gear and connected to said rocker-bar, a spring to hold said rack under tension, and grippers secured to said shaft adapted to contain a carrying-strand.

17. The combination with a plunger-shaft, of a rocker-bar secured to said shaft, a clutch-gear secured to said shaft, a rack meshing with said gear and connected to said rocker-bar, a spring to hold said rack under tension, grippers secured to said shaft to contain a carrying-strand and a knife positioned in the path of one of the grippers.

18. The combination with a plunger-shaft, of a rocker-bar secured to said shaft, a clutch-gear secured to said shaft, a rack meshing with said gear and connected to said rocker-bar, a spring to hold said rack under tension, grippers secured to said shaft adapted to contain a carrying-strand, a knife positioned in the path of one of said grippers and a striker to open the remaining gripper.

19. The combination with a hollow stock having a projection, of a spring-actuated jaw working within said stock, said jaw being adapted to work against said projection, a slot within said stock, a pin extending from said jaw through said slot, and a spring to engage said pin to hold the same, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD M. WILCOX.

Witnesses:

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C. A. LAWSON.