

Sept. 20, 1960

J. P. TRECIOKAS  
ENVELOP FASTENER MACHINE

2,953,275

Filed Sept. 15, 1959

2 Sheets-Sheet 1

Fig. 1

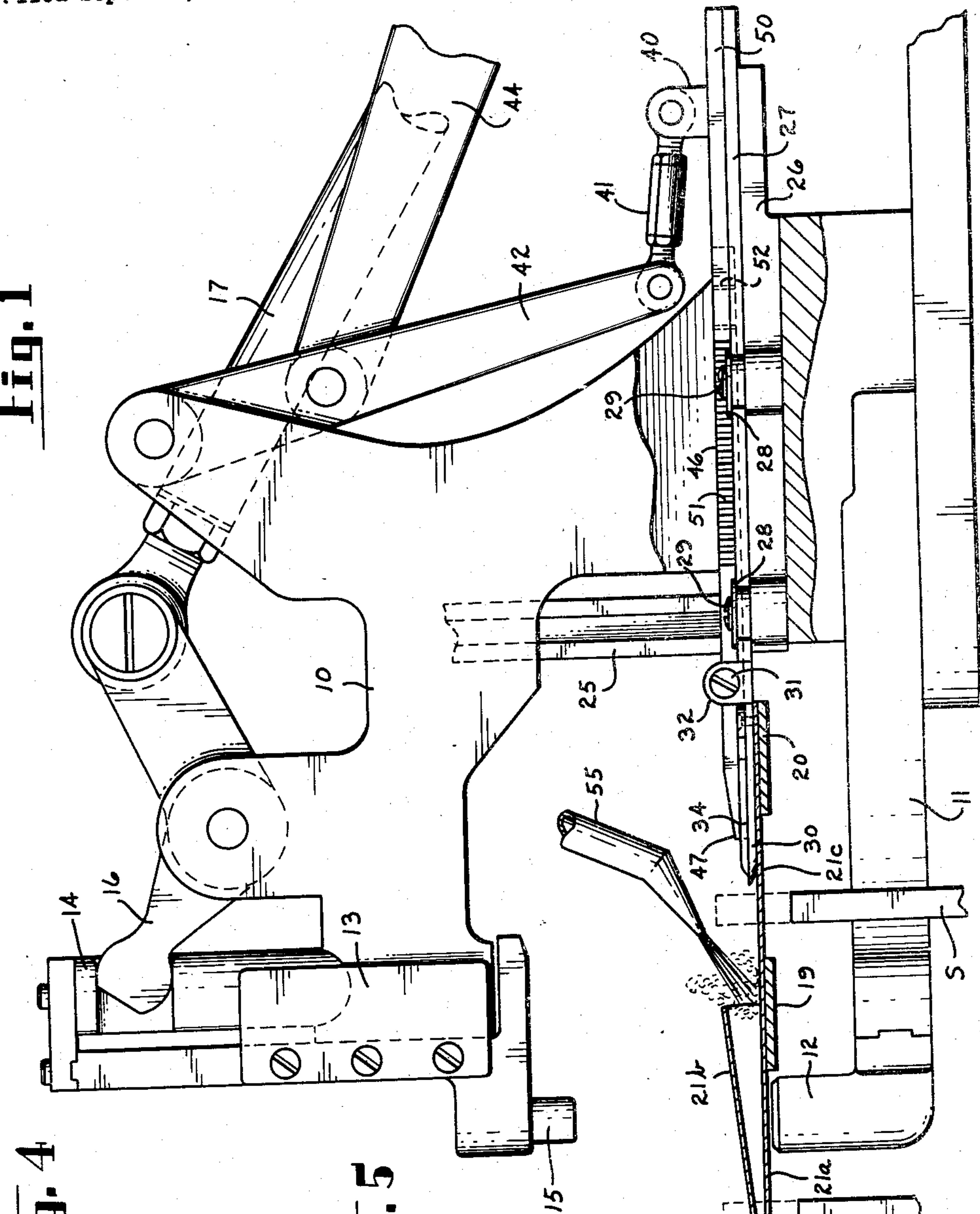


Fig. 4

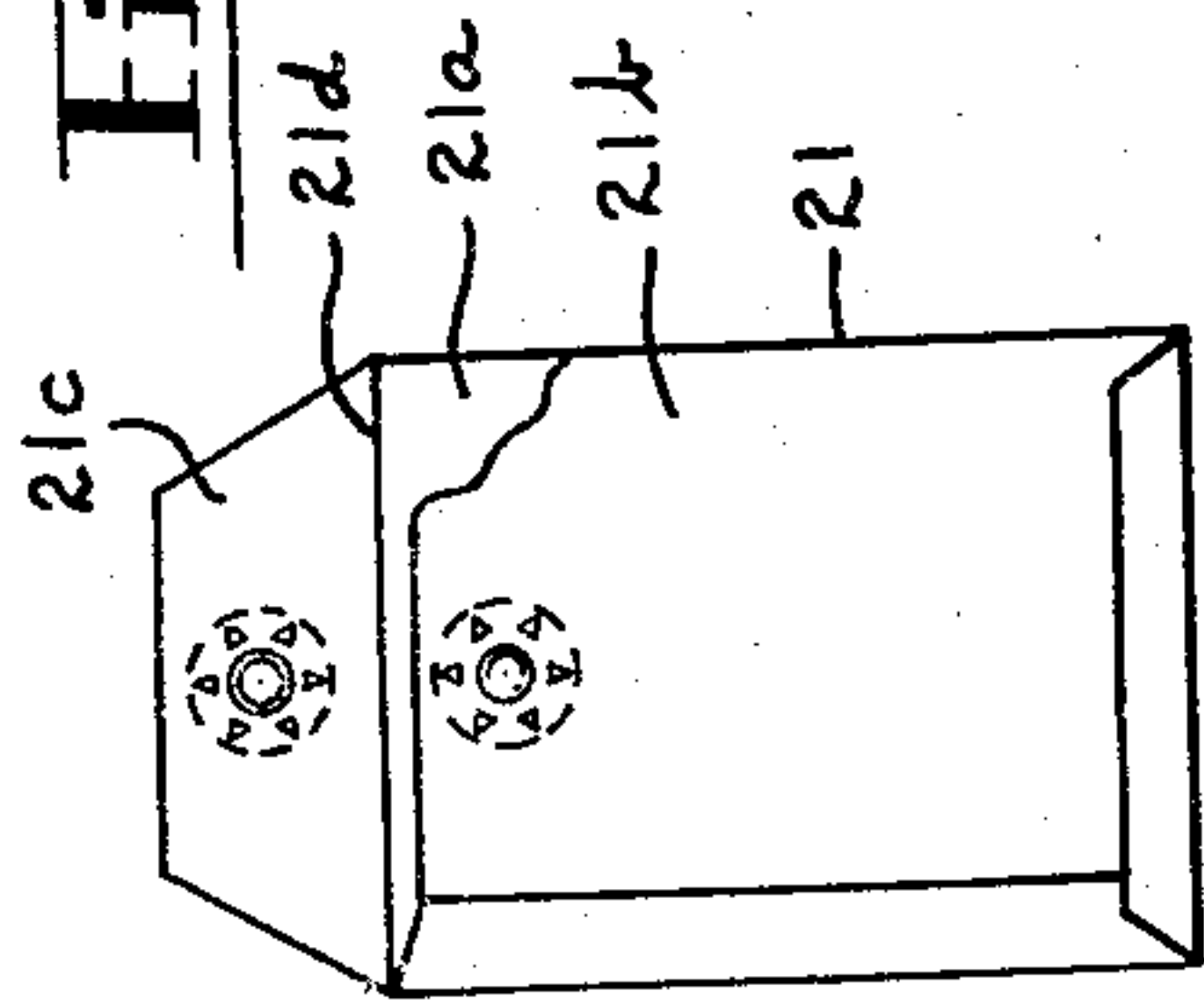
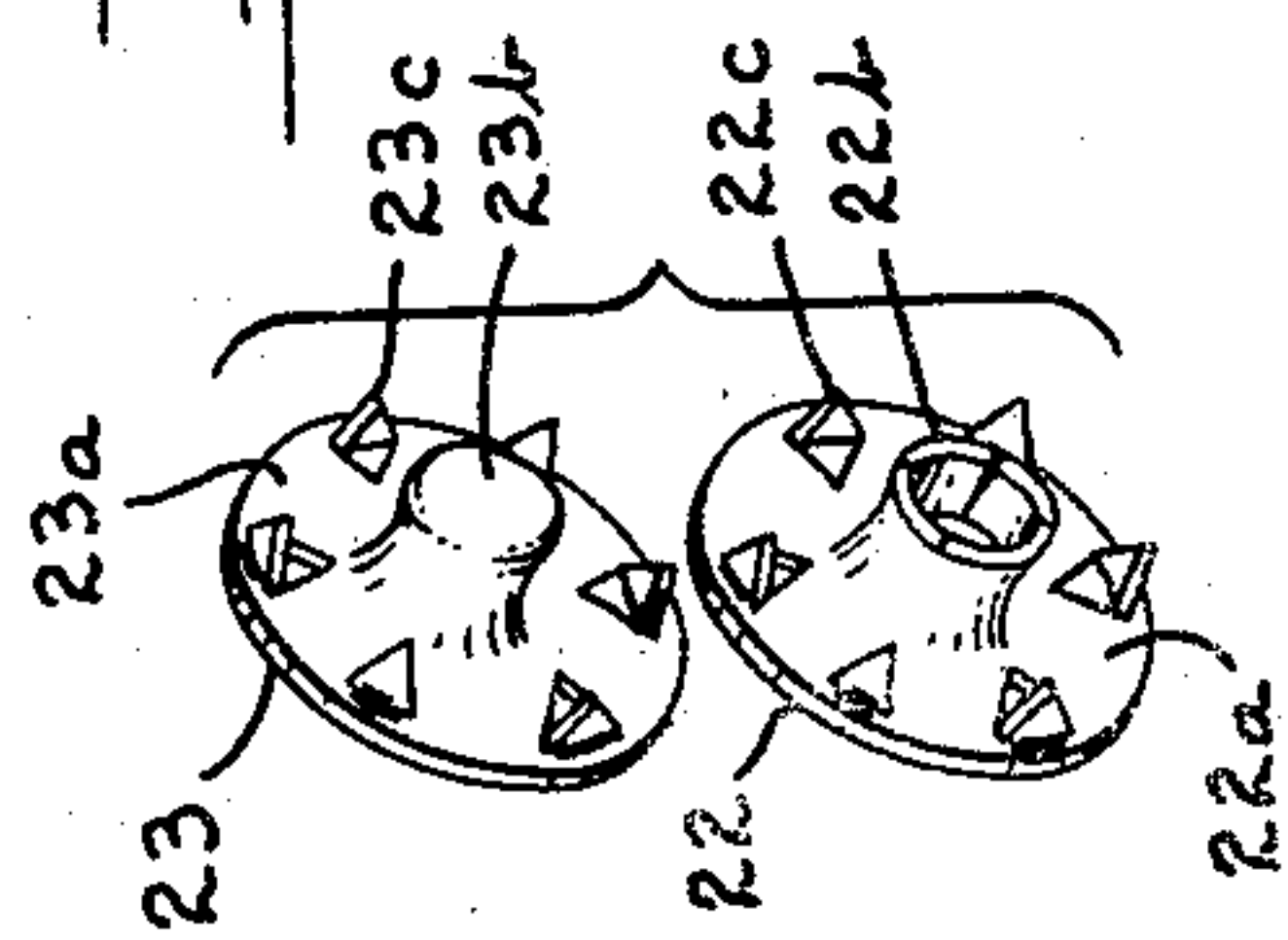


Fig. 5



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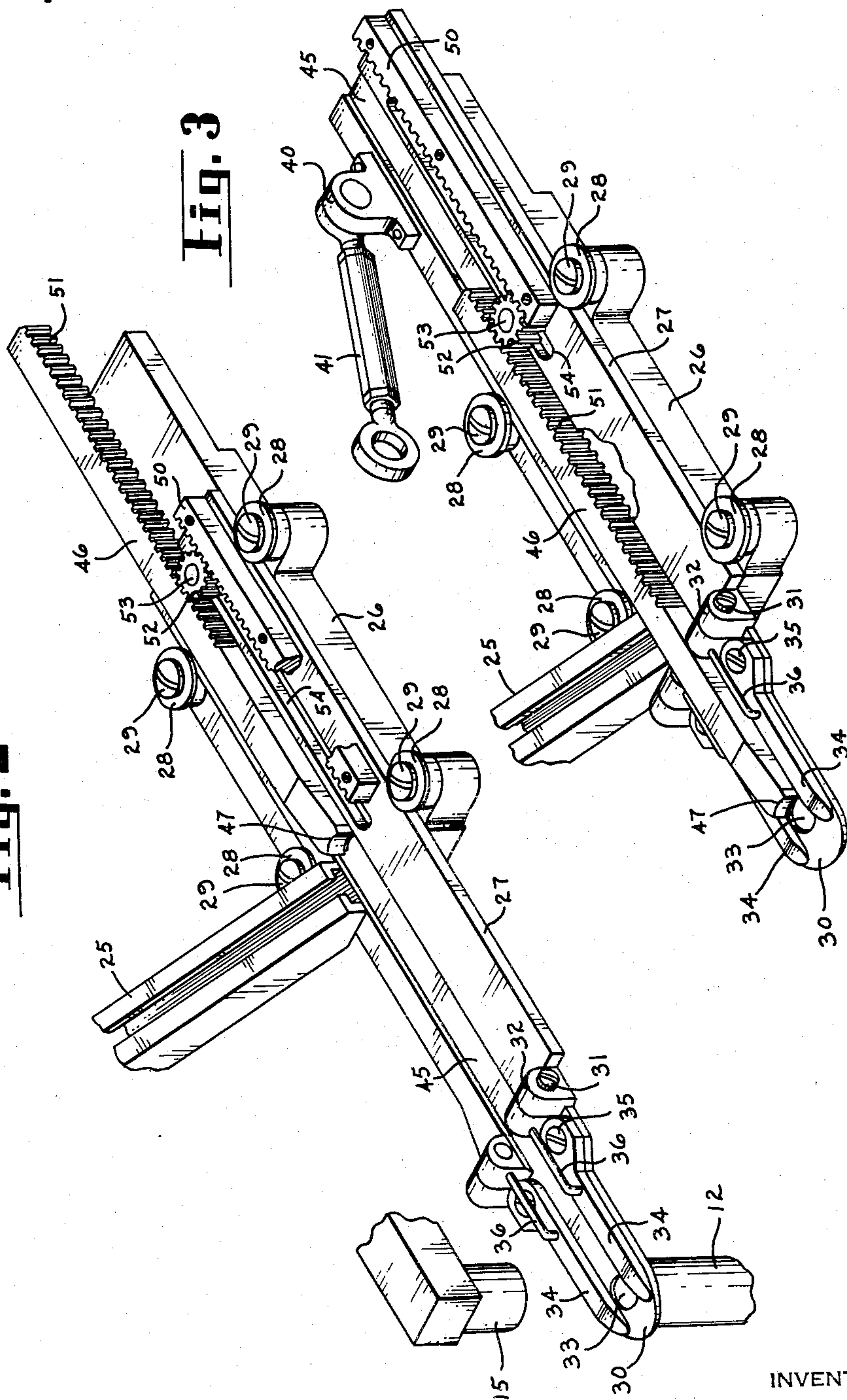
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**Fig. 2**



**Fig. 3**

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## ENVELOP FASTENER MACHINE

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4 Claims. (Cl. 218—6)

This invention relates to an apparatus for setting snap fasteners upon envelopes.

In the patent to Treciokas, 2,786,203, a machine is disclosed for attaching snap fasteners to envelopes where one part of the fastener may be inserted between the front and back through the open end of the envelop. In that machine, the envelopes were required to be pushed endwise over the setting tool which carried a part of the snap fastener.

The object of my invention is to provide an improved machine for setting that part of the fastener required to be introduced into the envelop whereby it may be possible to attach the fasteners while the envelopes progress on a conveyor best in side-by-side relation without requiring any endwise movement of the envelop. With the envelopes travelling in this fashion and their flaps extended, the fastener element must be projected a considerable distance from the edge of the flap into the position where it may be set inside the envelop. Thus, the setting station must be removed from the end of the feed chute a much greater distance than in the normal situation as in the patent above-referred to.

The invention provides an improved element transfer mechanism which will project the fastener elements over the considerable distance between the feed chute and setting station while requiring a travel of the transfer slide only half such distance.

The machine, can accordingly be more compact, simpler and cheaper to make.

In the drawings:

Fig. 1 is a side view of a portion of a fastener setting machine having my element transfer slide introduced therein;

Fig. 2 is a perspective view of transfer slide mechanism showing the slide in its fully advanced position;

Fig. 3 is a similar view showing the transfer slide in its retracted position;

Fig. 4 is a plan view of the open end of the envelop in open position showing the fastener attached thereto; and,

Fig. 5 is a perspective view of the two fastener elements which are applied to the flap and back of the envelop.

The general type of fastener setting machine with which my invention is associated is disclosed in the Carpinella Patent 2,735,567.

In the drawing, the numeral 10 designates a machine frame having a base plate 11 to the forward end of which is attached an anvil support member 12. The frame 10 has the usual head 13 within which is reciprocally mounted a plunger 14 carrying a setting punch or die 15 at its lower end, said punch being offset forwardly of said plunger so as to operate in axial alignment with the anvil support member 12. The common axis of the anvil support member or setting punch is generally referred to as the setting station of the machine. The plunger 14 may be actuated in the usual manner through a bell crank lever 16 and pitman link 17 actuated from the main drive shaft (not shown).

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The envelopes may be conveyed laterally into the machine by a belt system which is shown in Fig. 1 consisting of three support belts 18, 19 and 20; belt 18 being located outside the setting station and belts 19 and 20 being located inwardly of the setting station in what is termed the throat of the machine. The envelop 21 is held in position and conveyed with the belts by a supplemental belt 18a positioned above belt 18 and adapted to grip the body of the envelop therebetween.

The general type of envelop 21 upon which the fastener is to be set is shown in Fig. 4 and consists of a front section 21a, a back section 21b and a flap section 21c that is attached to the front section 21 along a fold line 21d. The particular type of snap fastener member used on the envelop is shown in Fig. 5 and consists of a socket element 22 and a stud element 23. The socket element 22 has a flat base 22a formed with resilient spring fingers 22b projecting from the center of the base. A series of attaching prongs 22c sheared out of the base are bent upwardly in the same direction as the spring fingers. The stud element 23 likewise is provided with a flat base 23a having a central stud head 23b and attaching prongs 23c projecting upwardly from the base in the same direction as the stud head.

The machine here disclosed is adapted to set only the stud member 23 upon the back section 21b of the envelop 21 whereas the socket element 22 may be set upon the envelop flap 21c by a standard machine such as disclosed in the above Carpinella patent.

Fig. 1 shows an envelop 21 carried into line with the setting station of the machine by the conveyor belt system and it may be held in that position while the belts continue to operate by vertically reciprocated stop fingers S operating in synchronism with the machine. A guide rail 24 may be supported in front of the machine to locate the envelop relative to the setting station of the machine so that the stud element 23 may be set inwardly the proper distance from the open end of said envelop.

The fastener transfer mechanism is best shown in Figs. 2 and 3. It operates to pick up a fastener element from the end of an element feed chute 25 and deliver it to the setting station of the machine. This mechanism consists of a guide plate 26 on which is slidably mounted an element transfer slide 27, said slide being guided and held on the guide plate by opposed flanged rollers 28, two on each side of said slide and mounted on said plate by bearing screws 29.

The forward end of the slide has an extension 30 pivotally connected thereto by screws 31 engaging in lugs 32 formed as a part of the slide 27. The extension 30 as will be explained later, serves as a setting anvil for the machine and is provided with a recess or socket 33 in its top surface in which a fastener element is held when it is being transferred to the setting station. Two element-retainer fingers 34 are pivoted on the top surface of the slide 27 as at 35 and are urged inwardly by springs 36 to obtain a suitable grip upon the fastener element when being moved by the transfer slide.

As noted in Fig. 1, the transfer slide is moved only half the distance between the chute 25 and the setting station; therefore, it is necessary to pick up an element from the chute 25 and move it the remaining half distance. To impart motion to the transfer slide 27, a lug 40 is attached to the upper surface of said slide adjacent its inner end and to which is connected a link 41 in turn connected to one end of a lever 42 pivoted to the machine frame 10 as at 43. The lever 42 may be actuated by another lever 44 deriving its driving force from the main drive shaft in the usual manner.

The upper surface of the transfer slide 27 is formed with a longitudinal channel 45 in which is reciprocally



mounted a pusher rod 46. The front end of the pusher rod has a reduced recessed end 47 which, when the transfer slide is in retracted position, is normally located just slightly rearwardly of the discharge end of the chute 25 (note Fig. 2). It is also to be noted that one edge of the channel 45 is aligned with the discharge end of said chute 25 and that the pusher rod 46 acts as a cut-off for the fastener elements fed down said chute.

In order to advance the pusher rod 46 half the distance between the chute and the setting station, a double rack-and-pinion mechanism is provided. A rack bar 50 is secured to the top surface of the transfer slide 27 and travels therewith, and a complementary series of rack teeth 51 are formed on the adjacent surface of the pusher rod 46. The rack bar 50 and pusher rod teeth 51 mutually engage a pinion gear 52 mounted on a stud shaft 53 passing downwardly through an elongated slot 54 in slide 27 and anchored in guide plate 26.

#### Operation

At the start of each cycle of operations, the element transfer slide 27 will be in the position as shown in Fig. 3, that is, with the said transfer slide retracted. In this position, it is to be understood a stud element will have been deposited in the recess 33 of the slide extension 30 from the previous cycle of operation.

As the envelopes are carried along the belt conveyor system 18, 18a, 19 and 20, the leading envelop will contact a suitable stop finger S that may be vertically reciprocated into and out of the path of the envelop by suitable mechanism and will function to hold the envelop in aligned position with the setting station of the machine. The stop fingers S may have a micro switch associated with them which will set the machine into operation.

Through linkage connections 41, 42 and 44, the transfer slide will be advanced to the position where the stud element 23 carried in recess 33 will be aligned with the setting station of the machine directly above the anvil support member 12. During the advancing stroke of the slide 27, a blast of air from a nozzle 55 may be directed into the open end of the envelop to separate the front and rear envelop sections as an assist in guiding the leading end of slide extension 30 into said envelop.

From Fig. 2, it will be apparent that as the transfer slide 27 is advanced to its foremost position, the rack bar 50 carried by said fastener slide 27 will rotate the pinion gear 52 and cause the pusher rod 46 to retract to a position where its leading recessed end 47 will be located directly in back of the discharge end of the feed chute 25 whereupon another stud element may be dropped into the feed channel 45. When the transfer mechanism comes to rest in the position shown in Fig. 2, the plunger 14 will then operate causing the setting punch 15 to descend and force the stud head 23b through the envelop back section 21b and the prongs 23c to pierce the envelop stock and bend outwardly and set the stud element firmly in place as shown in Fig. 4.

The reason the slide extension 30 is pivoted to the transfer slide at 31 is to allow some amount of hinging action to said extension as the setting punch presses the envelop and insert extension downwardly against the support member 12.

After the stud element setting operation, the plunger 14 will ascend and the transfer slide will be retracted to the position shown in Fig. 3. During the retracting stroke by reason of the rack-and-pinion mechanism, the pusher rod will, of course, be advanced forcing a stud element forwardly in the feed channel 45 and between the retainer fingers 34 and deposited in the recess 33.

What I claim is:

1. In a fastener setting machine for setting a fastener element on the back of an envelop and from within the pocket of said envelop and wherein the envelop is fed in side-by-side relation laterally into the machine, means providing a fastener setting station in line with the position of the envelop to which the fastener is to be attached, a chute for guiding fastener elements into said machine with the end of the chute remote from the setting station, a mechanism for feeding the fastener elements from the chute to the setting station comprising a fastener transfer slide movable halfway from said setting station to the chute, means releasably retaining a fastener element on the forward end of such slide whereby the fastener element is moved into the fastener setting position in the envelop, a pusher rod reciprocally mounted in said transfer slide and serving to pick up a fastener element from the end of such chute, and means for moving said pusher rod forwardly on the transfer slide as the latter is moved rearwardly to position said element in said element retaining means when the transfer slide has reached the end of its retracted position.

2. In a fastener setting machine having a setting station and a chute for guiding fastener elements into said machine with the end of the chute remote from the setting station, a transfer mechanism for feeding fastener elements from the chute to the setting station comprising a fastener transfer slide movable half the distance between said setting station and chute, means releasably retaining a fastener element on the forward end of such slide, a pusher rod reciprocally mounted on said transfer slide and serving to pick up a fastener element from the end of such chute, and means for moving said pusher rod forwardly on the transfer slide as the latter is moved rearwardly to position said element in said element retaining means when the transfer slide has reached the end of its retracted position.

3. In an element transfer mechanism for a fastener setting machine as defined in claim 2 wherein the means for moving said pusher rod is a double rack-and-pinion mechanism associated with said slide and pusher rod whereby movement of the transfer slide in one direction will move the pusher rod an equal distance in the opposite direction.

4. In a fastener setting machine for setting fastener elements upon a support comprising a reciprocating plunger having a setting punch located forwardly of the plunger axis, a stationary anvil support member supported on the machine base and positioned in axial alignment with the setting punch, the axis of said punch and die being the setting station of the machine, a chute for guiding fastener elements into said machine, a transfer mechanism for feeding fastener elements from the chute to the setting station comprising a fastener transfer slide movable half the distance between said setting station and chute, an extension carried on the forward end of said slide, said extension having a die recess for individually receiving a fastener element, releasable finger means for holding an element in said recess, said extension when the slide is in advanced position being supported by said anvil support and functioning as an anvil in clinching the fastener element to a support, a pusher rod reciprocally mounted on said transfer slide and serving to pick up a fastener element from the end of said chute, and means for moving said pusher rod forwardly on the transfer slide as the latter is moving rearwardly to position said element in said extension recess when the transfer slide has reached the end of its retracted stroke.

No references cited.