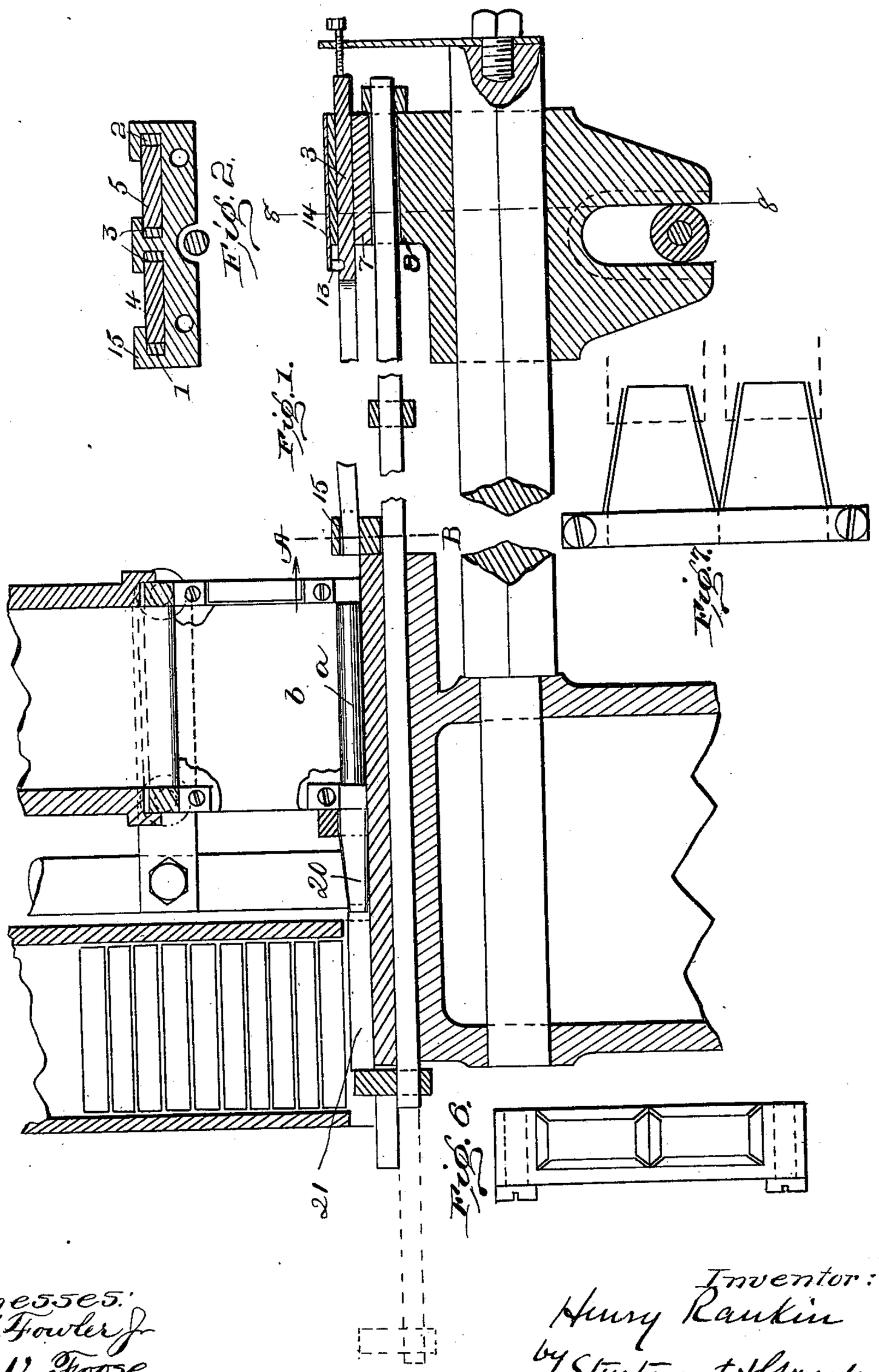
No. 666,975. Patented Jan. 29, 1901.

H. RANKIN.

CIGARETTE PACKING MACHINE.

(Application filed June 23, 1900.)

(No Model.) 2 Sheets—Sheet 1.



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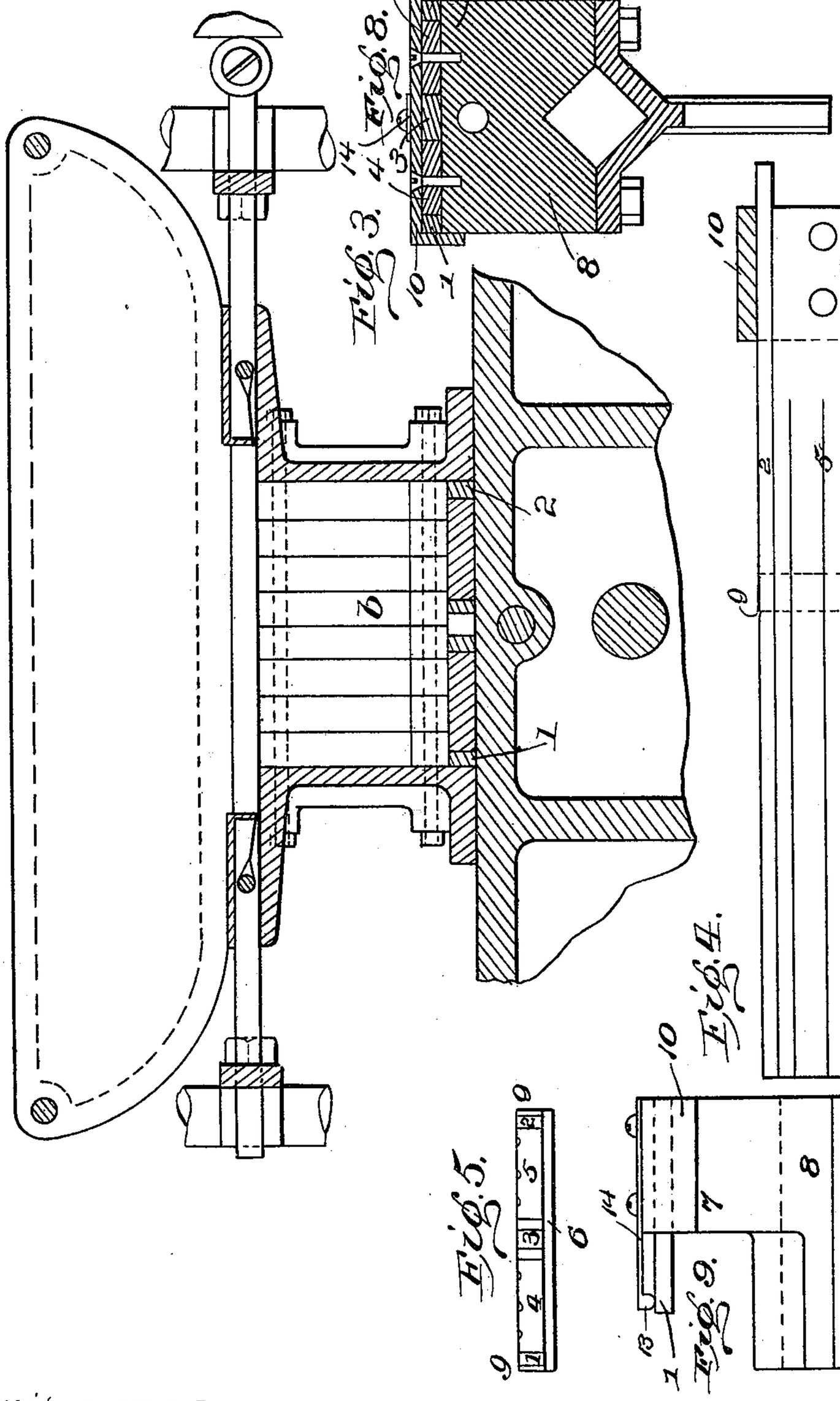

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UNITED STATES PATENT OFFICE.

HENRY RANKIN, OF LONDON, ENGLAND.

CIGARETTE-PACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,975, dated January 29, 1901.

Application filed June 23, 1900. Serial No. 21,356. (No model.)

To all whom it may concern:

Be it known that I, HENRY RANKIN, merchant, a citizen of the United States of America, residing at 10 and 11 Stonecutter street, Farringdon street, London, England, have invented certain new and useful Improvements in Cigarette-Packing Machines, of which the following is a specification.

This invention relates to cigarette-packing machines of the kind in which the packet designed to contain the cigarettes is before receiving its charge thereof pushed forward or otherwise manipulated so as to bring a number of flexible plates arranged to form a tapering expansible feed-tube, through which the cigarettes pass into the mouth of the packet, and so insure the entry of the same into the packet. It has been found in practice that the plates are liable to damage the mouth of the packet by reason of the plunger, by which the insertion of the cigarettes into the packet is effected, coming into contact with the plates, and so forcing them apart until the smaller opening or apex thereof is of greater area than the mouth of the packet into which the cigarettes are to be inserted.

Now it is the object of the present invention to so construct and arrange the plunger for the cigarettes that while efficiently performing its function of inserting the cigarettes into the packet its construction is such that at a certain point of its travel the area shall be diminished sufficiently to prevent any contact with the plates aforesaid, and so obviate undue expansion of the said plates and consequent tearing of the packet.

In order that the invention may be the better understood, drawings are appended, the invention being illustrated as applied to a machine of known construction, of which machine sufficient only is illustrated and described to permit the invention to be readily understood.

In the drawings, Figure 1 is a longitudinal section of a machine, illustrating a method of arranging and operating the plunger. Fig. 2 is a section on line A B, Fig. 1. Fig. 3 is a transverse section of the machine shown in Fig. 1. Fig. 4 is a plan, and Fig. 5 an end view, of the plunger. Figs. 6 and 7 are respectively detail front and plan views of the expansible feed-tube. Fig. 8 is a section on the line 8 8 of Fig. 1, and Fig. 9 is a side elevation of the cross-head or slide.

Referring to the drawings, 1 2 3 4 5 are the parts constituting the automatically-variable plunger, the total area of which is at its forward end in the present instance approximately equal to the space occupied by eight cigarettes. The parts 1 2 3 are connected together by means of the plate 6, while the parts 4 5 are in the present instance attached by bolts or the like to the top of the bracket 7, formed at the upper end of the cross-head or slide 8. The side pieces 1 2 are reduced in width for some portion of their length by this means, forming thereon a stop-shoulder 9. The inner part 3 is bifurcated, as shown, and while being supported by the bracket aforesaid, to which it is secured by the plate 10, is in company with the parts 1 and 2 free to travel irrespective of the said bracket.

The plunger illustrated is designed to be employed upon a machine for filling two packets; but it will be readily understood that it may without departing from the spirit of the invention be arranged to fill one, two, or more packets with any desired number of cigarettes or layers thereof.

Formed upon the upper surface of the part 3 are two recesses 11 12, with which is adapted to engage at stated periods a tooth 13 upon the under side of a spring 14, secured to the plate 10.

From the foregoing it will be understood that upon the forward movement of the cross-head or slide 8, which movement may be effected in any desired manner, the whole of the component parts of the plunger will advance together, the spring-tooth 13 then being engaged with the recess 11. This movement brings the plungers into contact with the cigarettes *a* and permits the same to be pushed forward out of the device *b* for collecting the same, and through the base of which device the plungers pass, as illustrated in Figs. 1 and 2. Continuing their movement, the plungers push the cigarettes forward, all the parts thereof being in contact with the ends of the cigarettes until such time as the shoulders 9 abut against the outer surface of the guide 15, when the further motion of the parts 1, 2, and 3 being arrested the tooth 13 rides out of its recess and the parts 4 5 continue their

movement alone through the expansible feed-tube 20, and the area of the plunger is thus automatically varied and lessened, so as not to expand said feed-tube and injure the cigarette-packet 21 being filled. The area of the parts 1, 2, and 3 at their forward end is about equal to one-half the diameter of a cigarette, so that when the parts 1, 2, and 3 come to rest the outermost of the cigarettes will still be in contact with the end of the moving parts 4 5 of the plunger, and such being the case will be pushed home into the packet. Upon the return movement of the cross-head or slide 8 the spring-tooth engages with the second recess 12, bringing it back until the end of the central portion 3 strikes against the stop 16, bringing the parts 1 2 3 to rest, and the parts 4 and 5 continuing their movement the tooth is disengaged from the said recess 12 and rides upon the surface of the part 3 until it again engages with the recess 11, when the whole of the plunger comes to rest and is in a position to repeat the cycle of operations.

It will be obvious that the dimensions and arrangement of the device may be varied to suit the number of cigarettes to be packed and the number of cases or packets to be filled.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a packet-filling machine, the combination with a device for assembling the articles to be packed and an expansible feed-tube to connect the same with the packet, of a variable plunger for forcing the articles from the assembling device or receptacle through the feed-tube, and means whereby area of the plunger is contracted at the said feed-tube for the purpose set forth.

2. In a packet-filling machine, the combination with a device for assembling the articles to be packed, and an expansible feed-tube to connect the same with the packet, of a variable plunger formed of independent longitudinal sections and adapted to force the articles from the assembling device through the feed-tube into the packet, and means for stopping a part or section of the sectional plunger at the feed-tube while the remainder forces the article therethrough into the packet.

3. In a packet-filling machine, the combination with a device for assembling the articles to be packed and an expansible feed-tube to connect the same with the packet, of a variable plunger for forcing the articles from the assembling device or receptacle through the feed-tube, and comprising a plurality of longitudinal sections or members, a cross-head or slide to which a portion of said sections is fixed and on which another portion is free to slide, a catch or fastening means for separably connecting the said sliding section to the cross-head, and means for moving the sliding section of the plunger into and out of engagement with its catch.

4. In a packet-filling machine, the combination with a device for assembling the articles to be packed, and an expansible feed-tube to connect the same with the packet, of a variable plunger composed of two spaced wider sections or members, a cross-head or slide to which said sections are fixed, smaller outer sections and a middle bifurcated section secured together and loosely carried by said cross-head, a catch or fastening device separably connecting the loose plunger-sections to the cross-head, and stops in the forward and rearward paths of the loose plunger members, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HENRY RANKIN.

Witnesses:
W. J. NORWOOD,
WALTER J. SKERTEN.