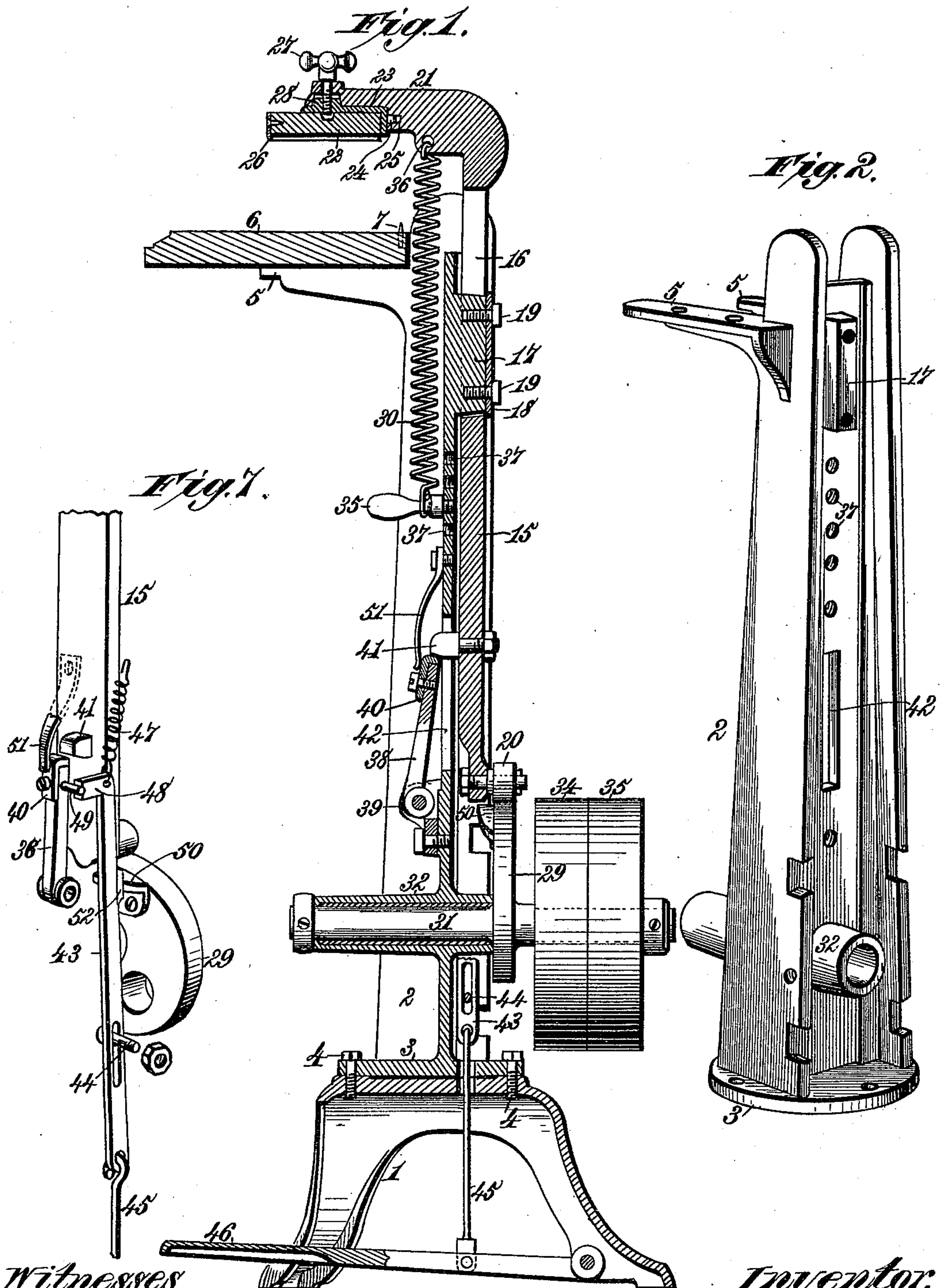



2 Sheets—Sheet 1.

Patented Nov. 25, 1890.



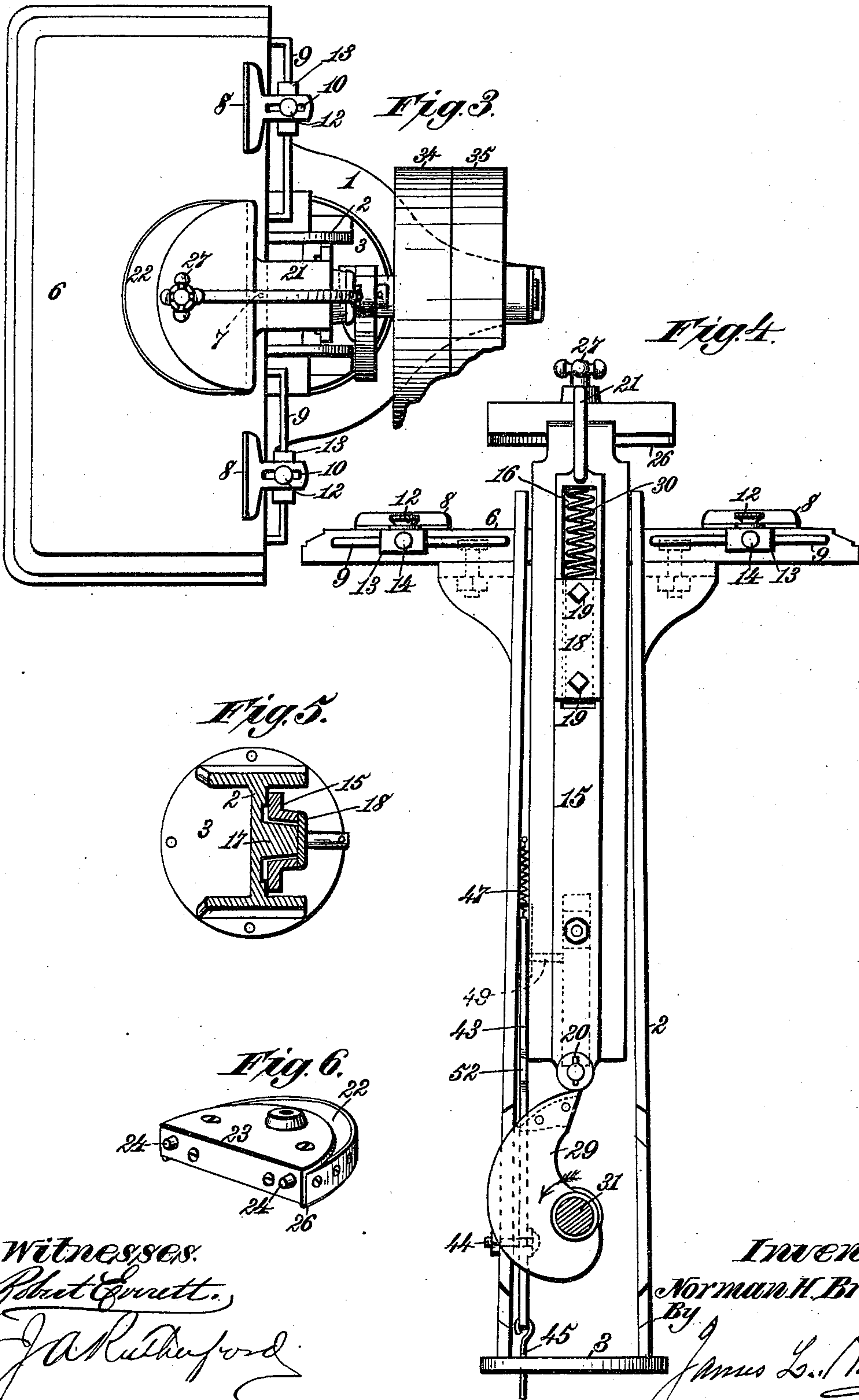
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SHIRT NECK MARKING MACHINE.

No. 441,531.

Patented Nov. 25, 1890.



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UNITED STATES PATENT OFFICE.

NORMAN H. BRUCE, OF WATERFORD, NEW YORK.

SHIRT-NECK-MARKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 441,531, dated November 25, 1890.

Application filed July 5, 1890. Serial No. 357,839. (No model.)

To all whom it may concern:

Be it known that I, NORMAN H. BRUCE, a citizen of the United States, residing at Waterford, in the county of Saratoga and State of New York, have invented new and useful Improvements in Shirt-Neck-Marking Machines, of which the following is a specification.

In the ordinary manufacture of knit undershirts prior to my invention the tubular knit bodies closed at the neck and shoulders are placed on a suitable support and a pattern-block centered and adjusted thereupon for the purpose of producing a pencil-line about the curved edge of the block, which conforms to the shape of neck-opening it is desired to produce in the shirt-front. This line constitutes a guide or gage for a line of stitching, after which the front of the tubular knit body is severed with shears along the stitched edge, thereby leaving an approximately segmental-shaped lining stitched to the inside of the back along the neck portion, while the front portion is separated to provide the neck-opening to permit the head of the wearer passing therethrough in the usual manner. The prior method is open to objections that reside more particularly in the time and labor involved and the presence of pencil-lines, which deface the goods and also the silk or other threads employed to stitch the back lining-piece, thereby marring the appearance of the articles for the market. The ordinary method or procedure is also objectionable, in that shirts of a definite size are not all marked exactly alike, since the pencil as it becomes dull or blunt will broaden the lines and place them at varying distances from the gage-face of the pattern-block, in consequence of which the position of the lines of stitching will vary, which results in different-sized neck-openings being produced. The time involved in centering and adjusting the pattern-block to each article renders it impossible to indicate the gage-marks with any considerable speed, and consequently the manufacture of the articles is materially retarded, while the pencil-lines are liable to spread and smear the goods and the sewing-silk to such extent as to damage the articles or mar their appearance for the market.

The objects of my invention are to avoid

the objections above mentioned; to provide novel means for mechanically supplying gage-creases to knit undershirts for indicating the points where the goods are to be stitched for the subsequent cutting of the neck-opening; to facilitate the marking of knit undershirts in the production of the neck-openings, whereby the manufacture of the articles is more rapidly and economically effected; to dispense with the pencil-marking of the goods and thereby avoid soiling or damaging the articles; to produce the articles of a given size or grade with neck-openings that are coextensive and exactly alike in curve and depth; to avoid manually centering and adjusting a pattern-block upon every article preparatory to producing the indicating-mark for the line of stitching; to provide for the automatic production of the gage-creases by simply depressing a treadle or lever at intervals; to provide a novel apparatus wherein a gage-crease is obtained by an automatically-reciprocated plunger-frame; to provide novel means for operating the crease-producing die; to provide novel means for producing the neck-openings for shirts differing in size, and, finally, to generally improve the apparatus for marking knit undershirts, whereby they can be expeditiously and economically manufactured and the labor involved materially reduced. To accomplish all these objects my invention involves the features of construction, the combination or arrangement of devices, and the principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical central sectional view of a shirt-neck-marking machine embodying my invention. Fig. 2 is a detail perspective view of the column or standard for supporting the driving mechanism. Fig. 3 is a top plan view showing the fast and loose pulleys broken away. Fig. 4 is a rear elevation of the machine, omitting the base-frame and the fast and loose pulleys. Fig. 5 is a detail transverse sectional view of the column or standard and the reciprocating plunger-frame. Fig. 6 is a detail perspective view of the gage-crease former or die. Fig. 7 is a detail perspective view of a portion of the plunger-frame, showing the detaining-trigger and the trip devices therefor.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

5 The numeral 1 indicates a metallic base-frame, and 2 a column or standard of the general form in cross-section of an I-beam, and having a circular or other shaped foot-piece 3 detachably secured by bolts 4, or other
10 devices, to the base-frame. The column is provided at or near its upper end with lateral bracket-arms 5, carrying an attached work-support or table 6, which is provided with a point or spur 7 for centering the shirt-body
15 at its neck portion. A pair of independently-adjustable gages 8 are arranged on guide-rods 9, secured at the rear edge of the work-table, these gages being slotted, as at 10, and secured by set-screws 12 to sleeves 13, that slide
20 along the guide-rods, and are held in any adjusted position by set-screws 14, whereby the gages are adjustable in two lines running at right angles to each other for the purpose of adapting the gages to shirts of different sizes.
25 In the rear channeled part of the column is arranged a vertically-reciprocating plunger-frame 15, having a slot 16, through which extends a guide-rib 17, projecting from the column, the plunger-frame being retained on the
30 guide-rib by a plate 18, bolted, as at 19, to the rib and overlapping the plunger-frame, as clearly shown in Fig. 5. The lower end of the plunger-frame carries a friction-roller 20, and its upper end is made as a head or arm 21,
35 that overhangs the work-table and carries the removable crease-former or die, which is composed of a wooden or other body 22, secured in a metallic shell 23, having spurs or tongues 24, adapted to enter recesses or seats 25 in the
40 overhanging head or arm. The wooden body is approximately semicircular in outline, and to its curved edge is secured a plate of brass or other metal or material suitable for the conditions required. The brass plate projects
45 at one edge to form the gage-edge or crease-former 26 in such manner that its sudden descent against the knit goods supported on the work-table will produce a crease corresponding to the outline of the gage-edge or crease-
50 former. The overhanging head or arm is provided with a screw 27, engaging a screw-socket 28 in the metallic shell of the creasing-die, whereby the latter can be quickly removed and another die of different size or
55 shape substituted therefor.

In practice I provide several dies of different size or shape for each machine to adapt it for operating on shirts of varying size or for producing gage-creases of different curvature or slope, each of the dies being constructed and adapted to engage the overhang-
60 ing head or arm. The plunger-frame is reciprocated by a cam 29 and a spiral or other suitable spring 30. The cam operates on the friction-roller 20 and is secured to a shaft 31,
65 journaled in a bearing 32 on the column or standard, and having fast and loose pulleys

33 34. The spring is connected at its lower end to an arm 35, secured to the column or standard and at its upper end to the over-
70 hanging head, as at 36, and to increase or diminish the tension or power of the spring the arm 35 is made adjustable. This is conveniently effected by screw-threading the arm and providing the column or standard with a
75 series of screw-holes 37, arranged in vertical alignment, and into any one of which the arm can be screwed. The revolution of the cam throws the plunger-frame upward and the recoil of the spring imparts the downstroke
80 thereto for producing the gage-crease.

In practice the cam-shaft is continuously rotated at high speed by belt or other gearing to a suitable motor, and obviously provision must be made for detaining the plunger-
85 frame in its elevated position and free from the action of the cam until such instant that the gage-crease is to be produced. To accomplish this I provide a trigger 38, pivoted at its lower end to a bearing, as at 39, on the col-
90 umn or standard and having its upper end provided with a detachable cap-piece or wear-plate 40, to engage a detachable stud 41, secured to the plunger-frame and working in a vertical slot 42 in the column or standard. 95
The engagement of the trigger with the stud detains the plunger-frame in its elevated position, Fig. 1, until the attendant places the shirt on the work-table, which can be conveniently done through the medium of the cen-
100 tering-gages and the centering point or spur. The plunger-frame must now be released for its downstroke, and to practically accomplish this a trigger-tripper or releasing mechanism is required, which, as here shown, comprises
105 a vertically-movable and oscillatory trip-lever 43, loosely supported by a pivot-pin 44 on the column or standard. The trip-lever extends vertically between a flanged part of the column and one edge of the plunger-frame, 110
and at the lower end connects by a rod 45 or otherwise with a lever 46, which I prefer to construct as a treadle to be operated by a foot of the attendant. The trip-lever connects at
115 its upper end by a spring 47 with the column or standard, so that normally the trip-lever is held elevated with its trip-nose 48 above the trigger 38, but by depressing the treadle the trip-lever is lowered against the tension of its spring
120 47, and its trip-nose 48 is placed in alignment or coincidence with a lateral pin 49 on the trigger, whereupon a swinging movement of the trip-lever is caused by a supplemental cam
50 to trip the trigger and release it from engagement with the stud on the plunger-frame. 125
The latter instantly descends under the influence of its spring 30 and the die strikes its blow on the shirt, thereby creasing the latter in conformity with the shape or slope of the gage-edge or crease-former 26. The cam in-
130 stantly raises the plunger-frame, and the treadle being released from pressure by the attendant, the trip-lever is lifted, the trigger is thrown to its detaining position by a suit-

able spring 51 or otherwise, and the operation is repeated.

The supplemental cam 50 is rigidly attached to or formed as a part of the main cam 29 and acts at the proper instant on the trip-lever. I prefer to provide the trip-lever with a wear-plate 52, which can be renewed if unduly worn, as can the cap-piece or wear-plate on the trigger.

I do not confine myself to a spring for imparting the effective or downstroke of the plunger-frame, nor do I confine myself to the particular trigger and tripping devices shown and described, as other detaining and releasing mechanism under control of the attendant could be employed.

Having thus described my invention, what I claim is—

1. In a shirt-neck-marking machine, the combination of a work-table, a plunger-frame having a head or arm overhanging the work-table and carrying a gage-crease former or die of the shape required to indicate the stitching-line and the curvature of the desired neck-opening, and a rotating power-driven cam mechanism for moving the plunger-frame, substantially as described.

2. In a shirt-neck-marking machine, the combination, with a work-table, of a movable plunger-frame carrying a gage-crease former or die of the shape required to indicate the stitching-lines in the production of the neck-openings, means for reciprocating the plunger-frame and a detaining and releasing mechanism for the plunger-frame, substantially as described.

3. In a shirt-neck-marking machine, the combination, with a work-table, of a movable plunger-frame carrying a gage-crease former or die of the shape required to indicate the stitching-lines in the production of neck-openings, means for reciprocating the plunger-frame, a trigger for detaining the plunger-frame, and trigger-tripping mechanism, substantially as described.

4. In a shirt-neck-marking machine, the combination of a column or standard carrying a work-table, a plunger-frame moving on the column or standard and having a head or arm overhanging the work-table, a power-driven cam for moving the plunger-frame upward, a spring for throwing the plunger-frame downward, and means for temporarily detaining the plunger-frame in an elevated position, substantially as described.

5. In a shirt-neck-marking machine, the combination of a column or standard carrying a work-table, a reciprocating plunger-frame having a stud and a head or arm overhanging the work-table for carrying a gage-crease former, means for reciprocating the plunger-frame, a trigger pivoted to the column or standard to engage the stud on the plunger-frame, and means for tripping the trigger to release the plunger-frame, substantially as described.

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

NORMAN H. BRUCE.

Witnesses:

JAMES A. RUTHERFORD,
GEO. W. REA.