

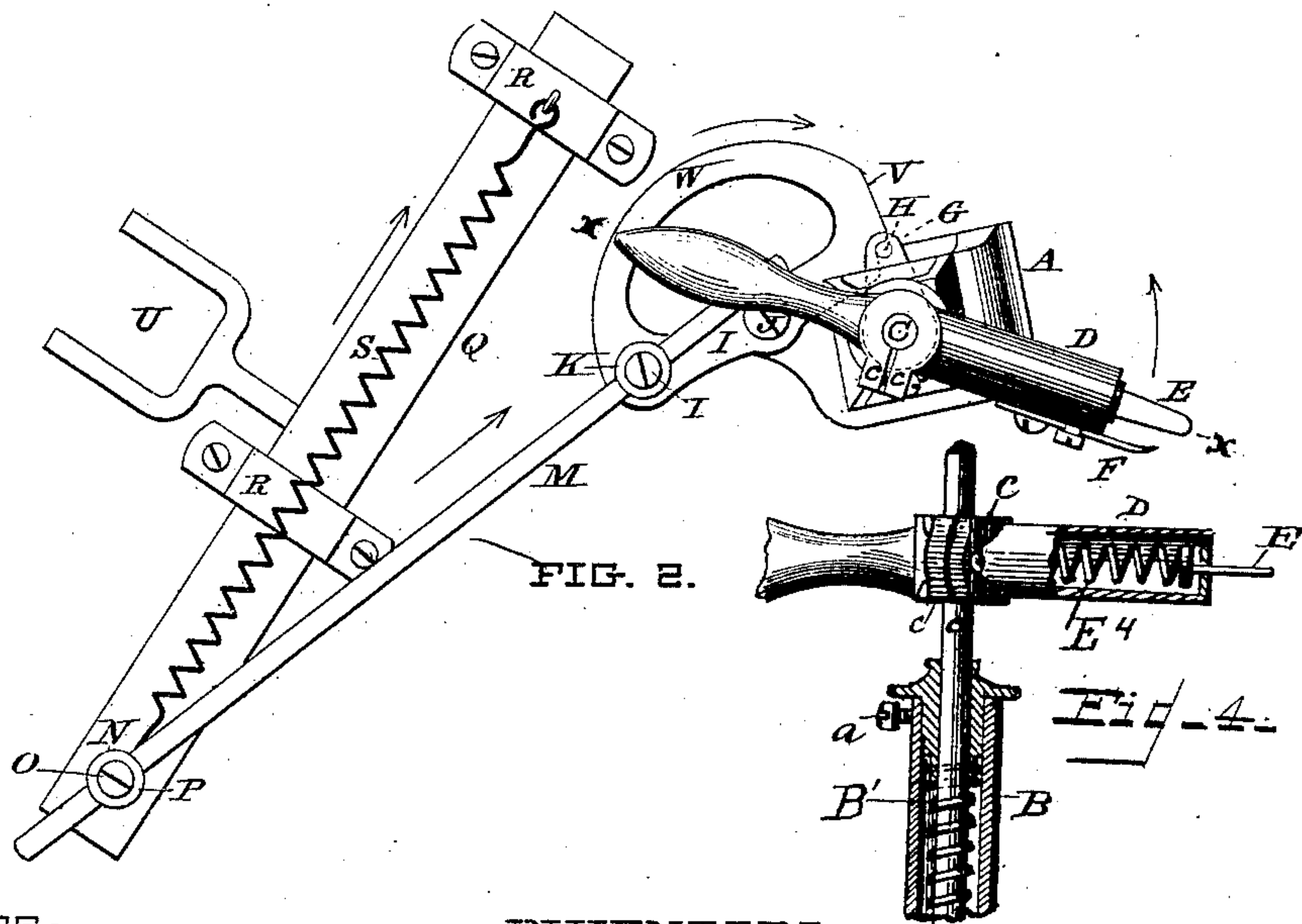
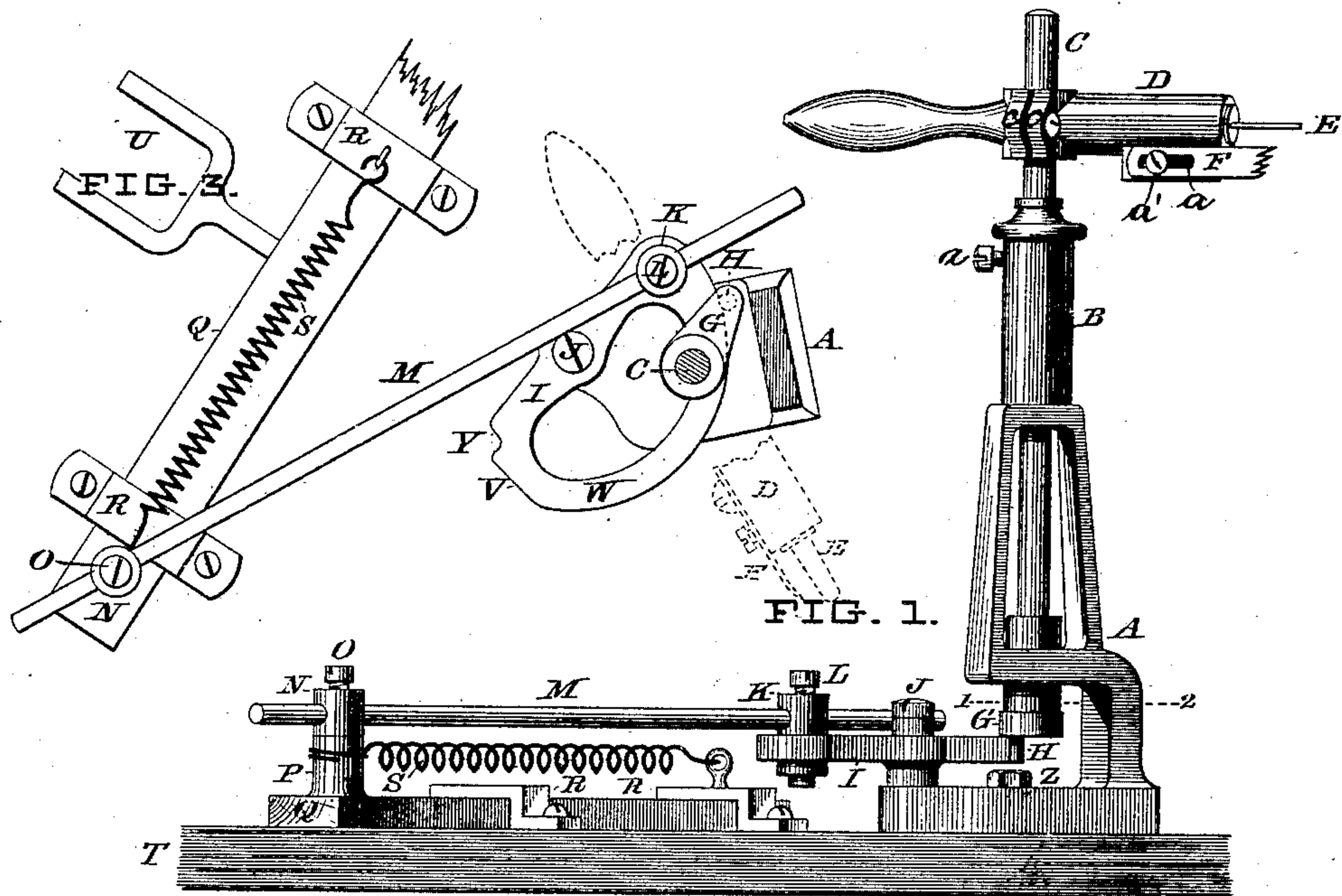
(No Model.)

E. H. BROWN & F. LASHER.

STOP MOTION FOR KNITTING MACHINES.

No. 354,387.

Patented Dec. 14, 1886.



WITNESSES:

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EUGENE H. BROWN AND FRANK LASHER, OF BENNINGTON, VERMONT.

STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 354,387, dated December 14, 1886.

Application filed December 28, 1885. Serial No. 186,840. (No model.)

To all whom it may concern:

Be it known that we, EUGENE H. BROWN and FRANK LASHER, both of Bennington, in the county of Bennington and State of Vermont, have invented certain Improvements in Stop-Motions for Knitting-Machines, of which the following description, in connection with the accompanying single sheet of drawings, constitutes a specification.

10 This invention relates to automatic mechanism for stopping circular or other knitting-machines whenever, from any cause, holes are produced in the fabric by imperfect knitting or the breaking of needles, or when snarls or
15 bunches of yarn accumulate upon or between the needles. It is more especially applicable to cylindrical knitting, although it is susceptible of application in other processes of knitting. It embraces an adaptation of parts
20 whereby the feelers which press against the fabric to detect holes or other imperfections, just above the needles and the parts connected with them, and upon which they are mounted, may be firmly held in reliable engagement
25 while the knitting progresses normally; but if the feelers detect an imperfection amounting to a hole in the knitting, or encounter an accumulation of yarn on the needles, such results in the feelers being carried forward and along
30 with such defect or impediment by the momentum of the cylinder, such forward movement of the feelers effecting partial rotation of a rock-shaft with which they are connected, whereby the shipping bar or lever is released
35 and the same, by means of a spring provided for that purpose, is thrown over so as to stop the machine.

The novel parts of this invention consist in a cam having a notch, projection, or indent
40 in its periphery with which a lug or pin at the end of an arm on the rock-shaft engages to constitute a locking apparatus to hold the feelers in position to their work, and also to lock the shipper-bar in position for the belt to
45 drive the machine. It also has a swivel-stud on the side thereof opposite the locking-indent, perforated for a connecting-rod, the other end of which is connected with a similar swivel-stud attached to the shipper bar or lever.
50 One important feature of our invention consists in the adjustment of the general line

of action of the connecting-rod substantially at right angles with the arm of the rock-shaft which carries the locking pin or lug which co-operates with the indent on the cam.

Our invention is fully shown in the drawings, wherein Figure 1 exhibits an elevation of the invention. Fig. 2 is a plan view of the same; and Fig. 3 is a plan view, partly in horizontal section, on the line 1 2 of Fig. 1. Fig. 4 is a detail view, partly in vertical section, on the line X X of Fig. 2.

Embodied as herein shown it is adapted to be used in connection with the common cylinder-frame for knitting tubular fabric like the bodies of undershirts, when the take-up is above the needles and the needles are attached to and revolve with the cylinder. As these knitting-machines are of the most common variety and are well known, we have not shown them.

We provide a standard, A, which may be bolted to some convenient part of the machine—as the table, for instance—by the bolt Z. The upper section of this standard is constructed as a barrel or cylinder, B, chambered for the reception of a torsion-spring, B', one end of which is attached to the reduced lower end of a cap, B², fitting within the cylinder and having a flange resting on the upper edge of the latter, and the other is connected with the rock-shaft C. The tension of said spring is adjusted by turning the cap either to the right or left, and fastening it by the set-screw a. This rock-shaft C carries at its top what we have designated as an "actuating-arm," D. This consists of a cross-head, of which the central portion constitutes a clamping-hub having two jaws, c c, which embrace the shaft C, and are gripped by a set-screw. One arm of this cross-head is shaped as an ordinary handle for conveniently affecting the rotation of the rock-shaft, while the other end, D, is made hollow to receive a spring, E¹, the office of which is to force the round-ended blade E (called a "feeler") against the knit cloth just above the tops of the needles.

Immediately beneath and a little ahead of feeler E the clamp-plate F is attached to arm D. This claw is provided with an elongated slot, a, through which passes a screw, a', for securing it in place and allowing it to be lon-

gitudinally adjusted. The claw is usually set so as to readily catch any yarn, waste, or flyings which may catch in the needles and from any cause accumulate thereon. The action of these parts is such that if feeler E is caught in a hole or claw F is caught by a snarl of yarn on the needles, either will, as the cylinder advances, drag the feeler or claw with it and thus cause a partial rotation of the shaft C.

10 Shaft C has at its bottom what we have designated as a "locking-arm," G, from the outer end and underside of which depends the locking-pin H. Shaft C has a limited movement from the position shown in Fig. 2 to that shown in Fig. 3. The pin H co-operates with the locking-indent Y, (shown on plan in Fig. 3,) of cam I, which rotates about stud J. On the upper side of cam I is the swivel-stud K, which is perforated for the reception of the connecting-rod M. It is also provided with a binding-screw, L, whereby the adjustment of the rod M in the stud may be secured. A similar perforated swivel-stud, N, is pivoted on hub P of the shipping-bar Q, which works in slides R R, which may be attached to any convenient part of the machine or its appurtenances. This shipping-bar is provided with a fork, U, which spans the driving-belt and shifts it from the driving to the idle pulley, or vice versa, as required.

30 The particular style of shipping device forms no specific part of our invention, as they are of various kinds—a handle or lever being common varieties.

35 A prominent feature of the invention is the cam-face V of the cam I. This cam-face extends from the locking-notch Y to the concentric portion W of the edge of the cam. Its office, as the cam rotates after being unlocked or released, is to force pin H and arm G around into the position seen in Fig. 3. Considered in relation to the forward movement of the knitting-cylinder such rotation of the rock-shaft C causes the feeler E or claw F to quickly swing backwardly and out of engagement with the defect in the knit fabric. The spring B' within the cylinder B serves to hold the pin H normally in engagement with the locking-indent Y.

50 It will be seen from the drawings that when the parts are set or adjusted for knitting, as shown in Fig. 2, the pivotal centers of motion N, L, and J are approximately in a line

and nearly at right angles with a radial line running through centers of C and H, and the line of motion of the bar Q in its guides is arranged in reference to the aforesaid line on a line as nearly parallel therewith as the circumstances of the case will permit. Such arrangement renders the action of the spring S most effective. The action and force of this spring is exerted when the shipper is set and cam I is locked for the machine to run in a direction tending to force rod M forward in the direction of the retraction of the spring, which would cause cam I to rotate about its center J in the direction of the arrow, seen next to its periphery, around into the position shown in Fig. 3. By adjusting these several operative parts and centers of movement N, K, and J in the manner shown the least possible binding restraint and pressure are brought to bear on locking-pin H when set, and as a consequence the amount of force applied either to the feeler E or the claw F necessary to rotate rock-shaft C is reduced to a minimum.

We claim as our invention—

1. The combination of the vertical rock-shaft having an actuating-arm and a locking-arm, and provided with a spring to impel its rotation in a direction to bring the feelers against the fabric above the needles or in the path of obstructions accumulated thereon, a rotating cam having provisions for engaging with or being locked in working position by the locking-arm of the rock-shaft, a shipping bar or lever provided with a spring having its tension adjusted to actuate the shipper to stop the machine, and an adjustable rod connecting the cam with the shipping-bar or lever, substantially in the manner described, and for the purposes set forth.

2. The combination, with a supporting-standard, of a vertical rock-shaft having an arm, D, at its upper end and a locking-arm at its lower end, the locking-pin H, the cam I, connecting-rod M, shipping-bar Q, and spring S, substantially as set forth.

In testimony whereof we have hereto subscribed our names, at North Bennington, Vermont, this 12th day of December, A. D. 1885.

EUGENE H. BROWN.
FRANK LASHER.

In presence of—

FRANKLIN SCOTT,
HENRY A. MORSE.