No. 775,742. PATENTED NOV. 22, 1904.

W. BACH.

CAM DEVICE FOR LAMB KNITTING MACHINES.

APPLICATION FILED OCT. 20, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.

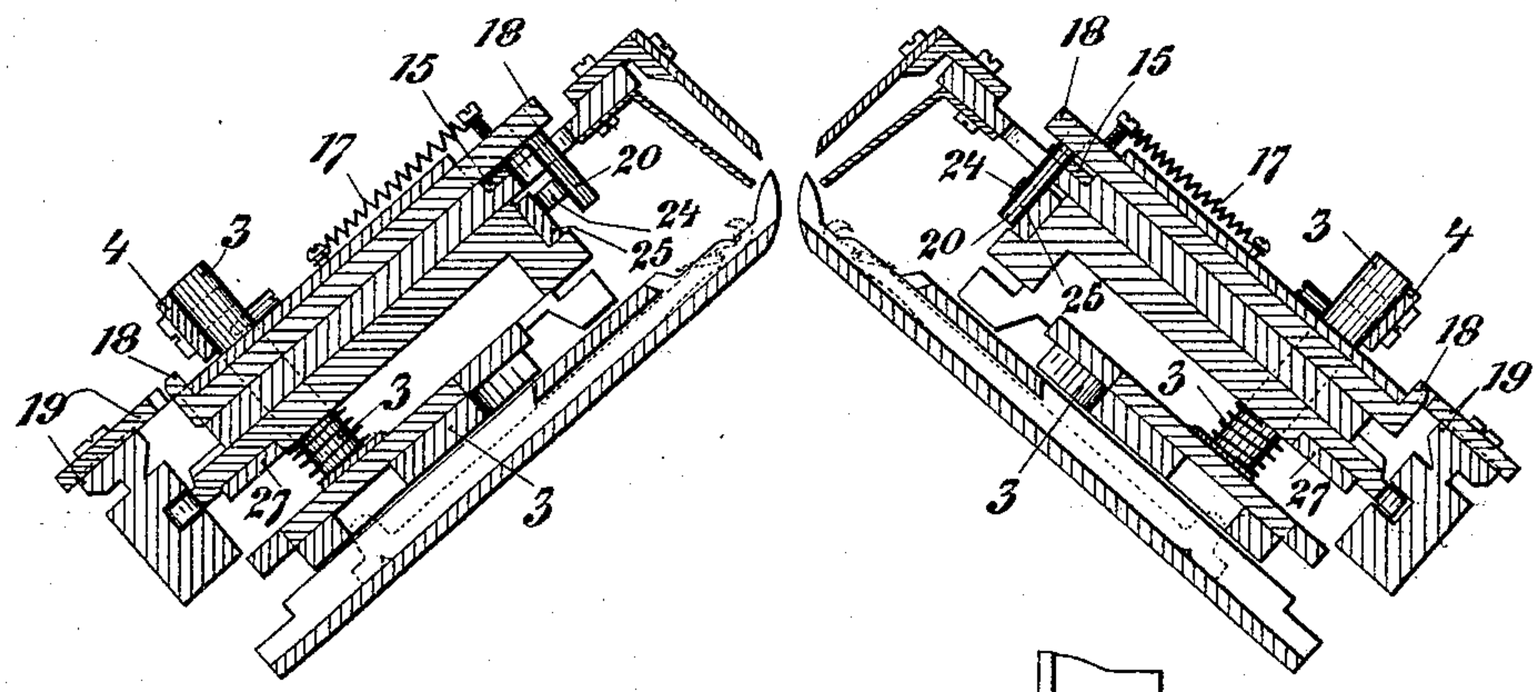
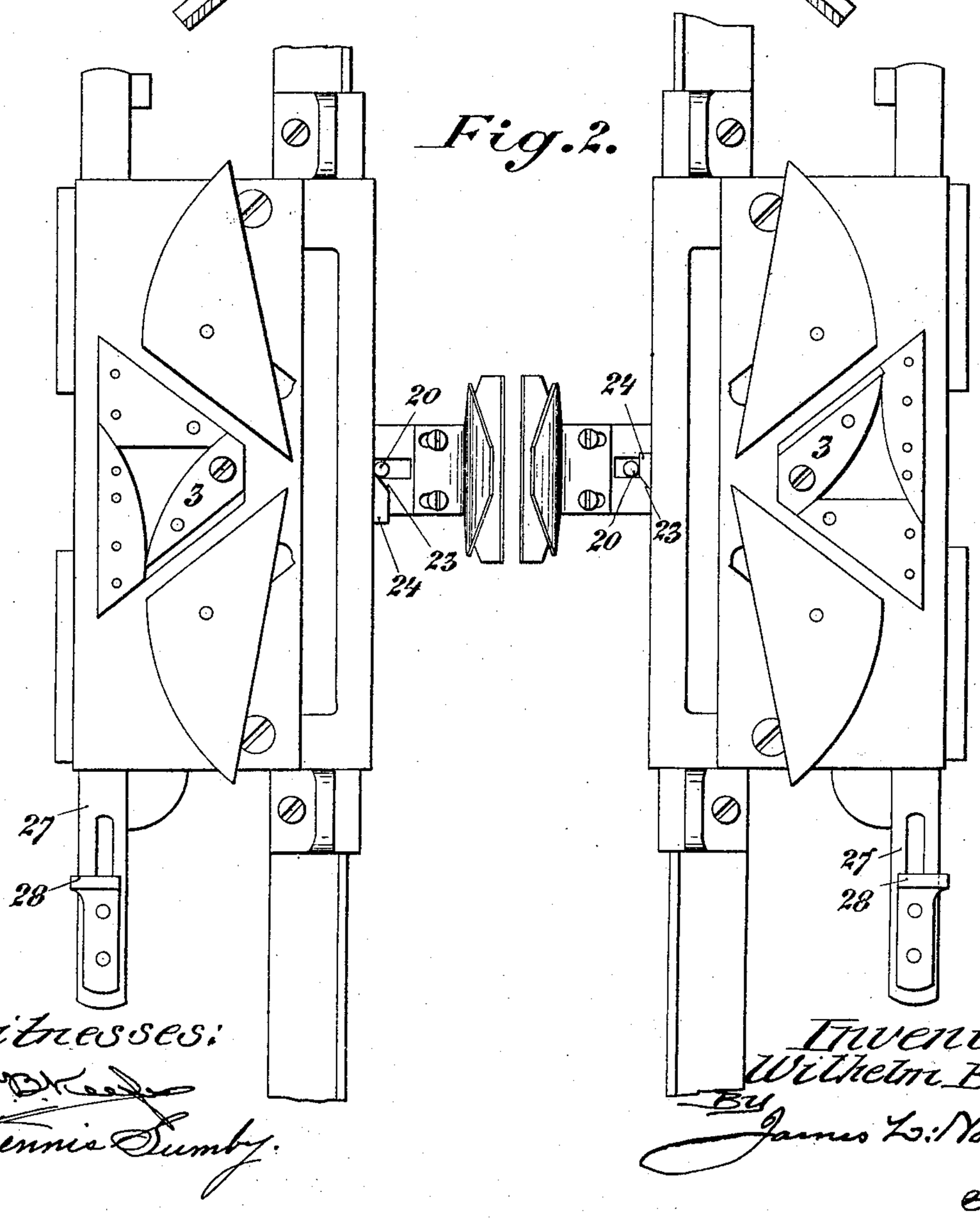


Fig. 2.



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NO MODEL. 4 SHEETS—SHEET 2.

Fig. 3.

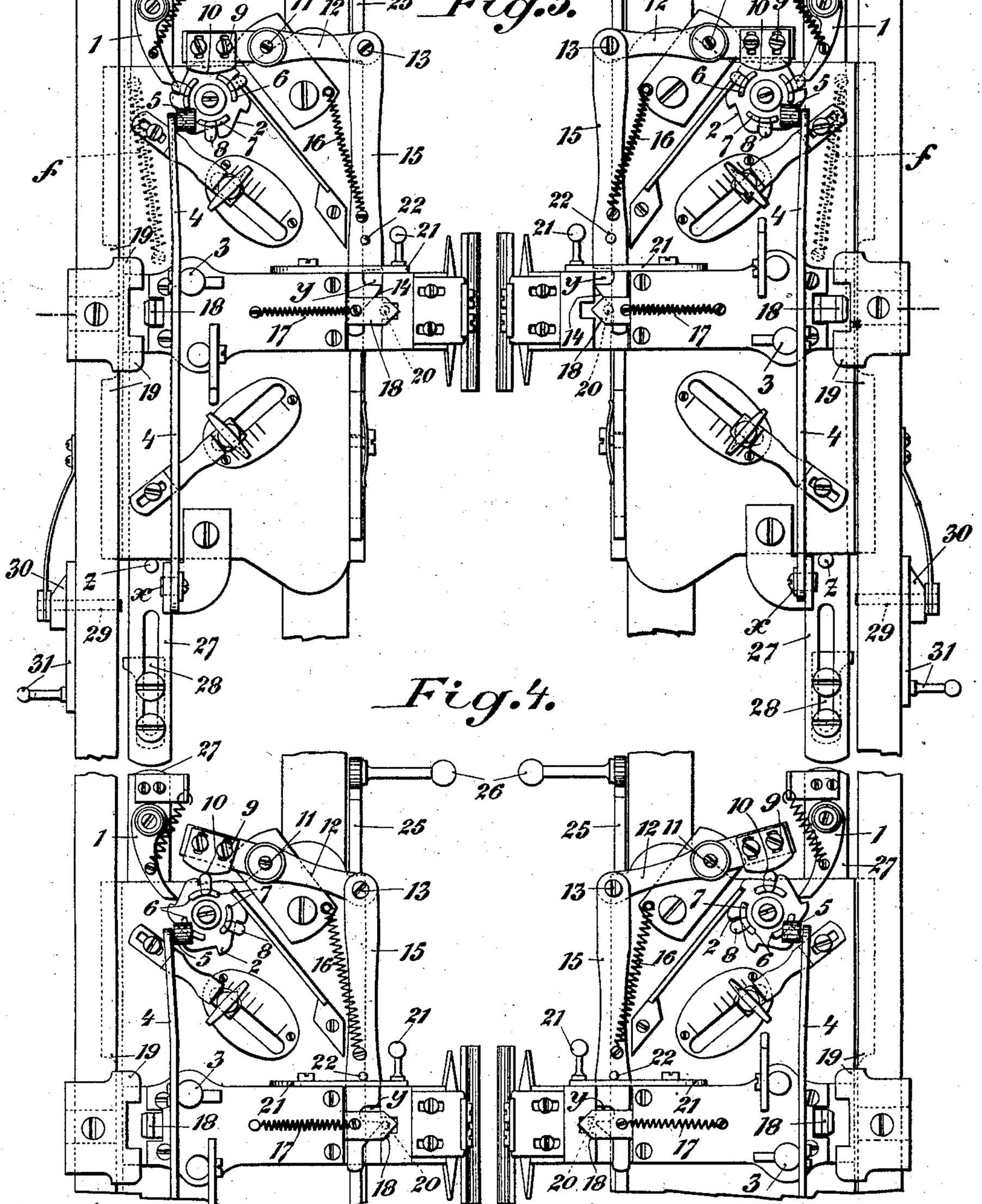

Fig. 4.

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NO MODEL. 4 SHEETS—SHEET 3.

Fig. 5.

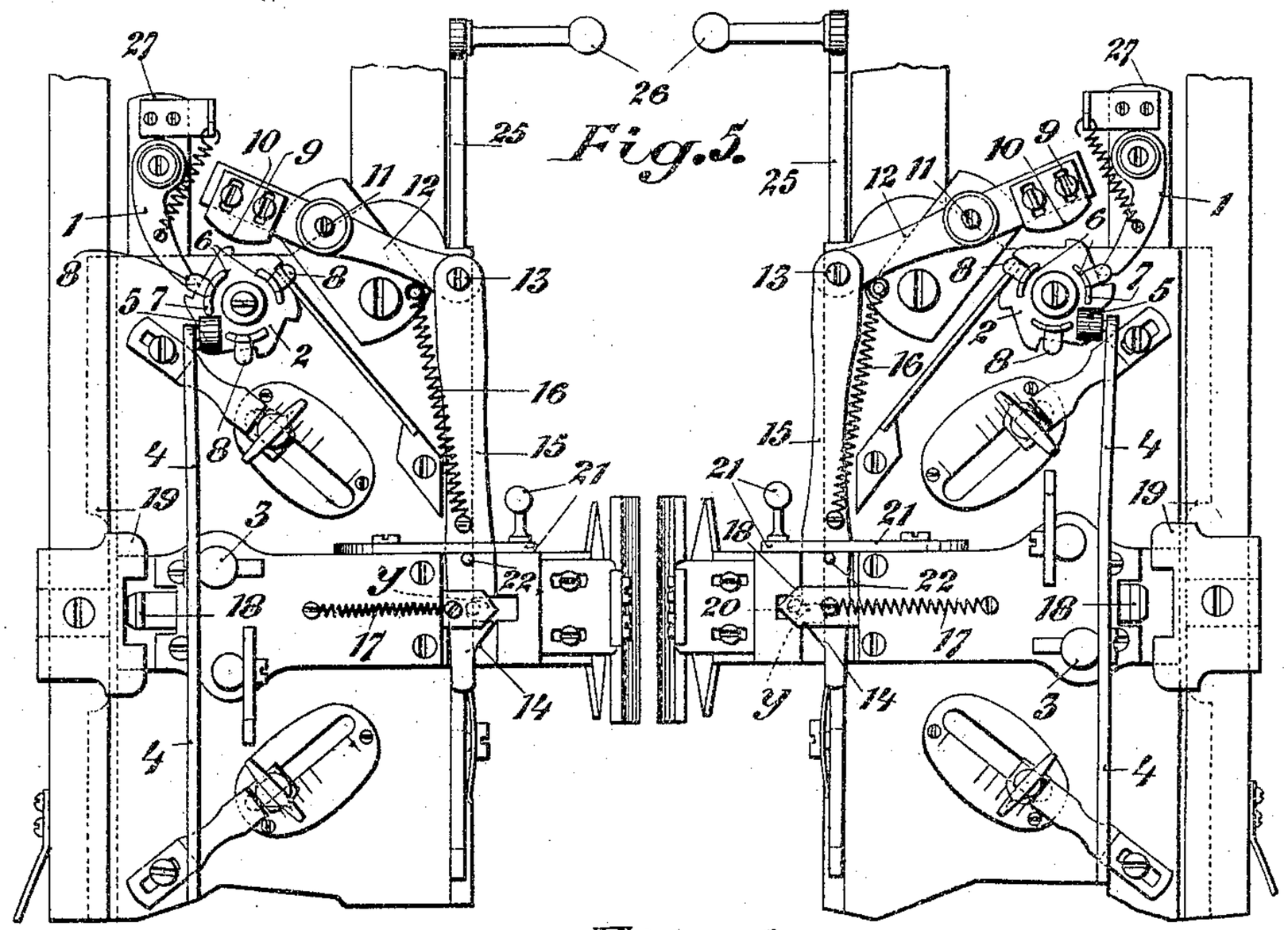
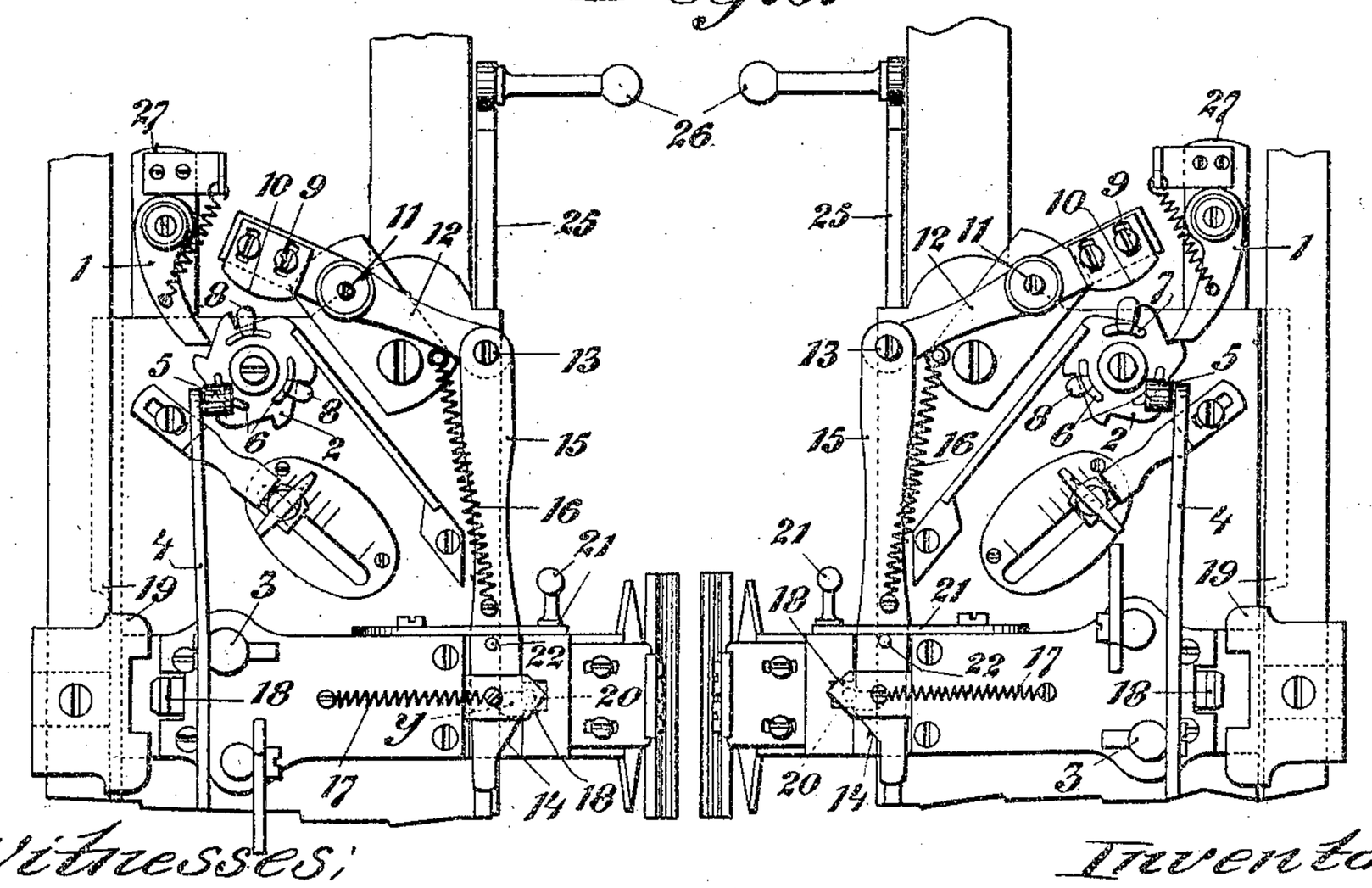


Fig. 6.



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NO MODEL. 4 SHEETS—SHEET 4.

Fig. 7.

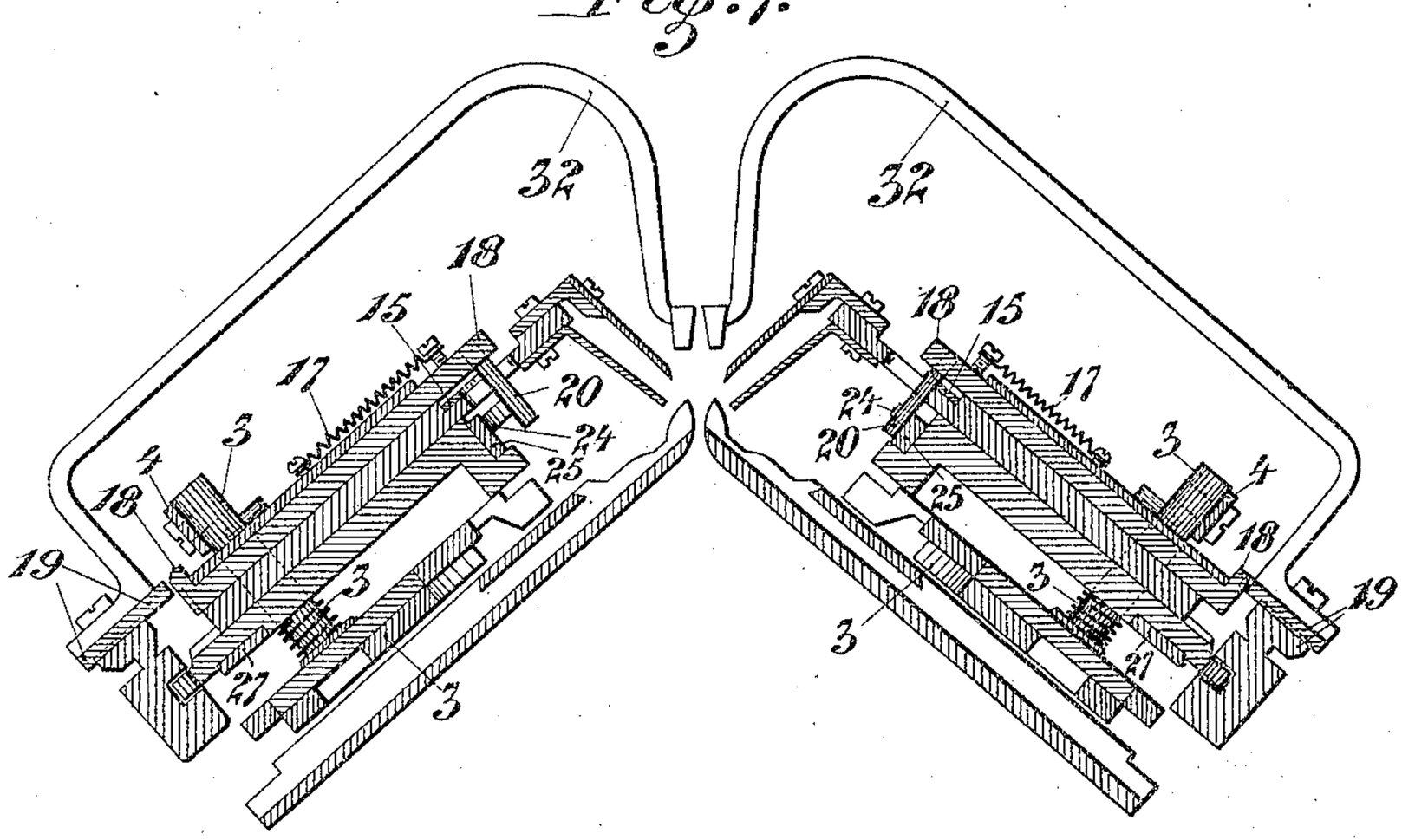
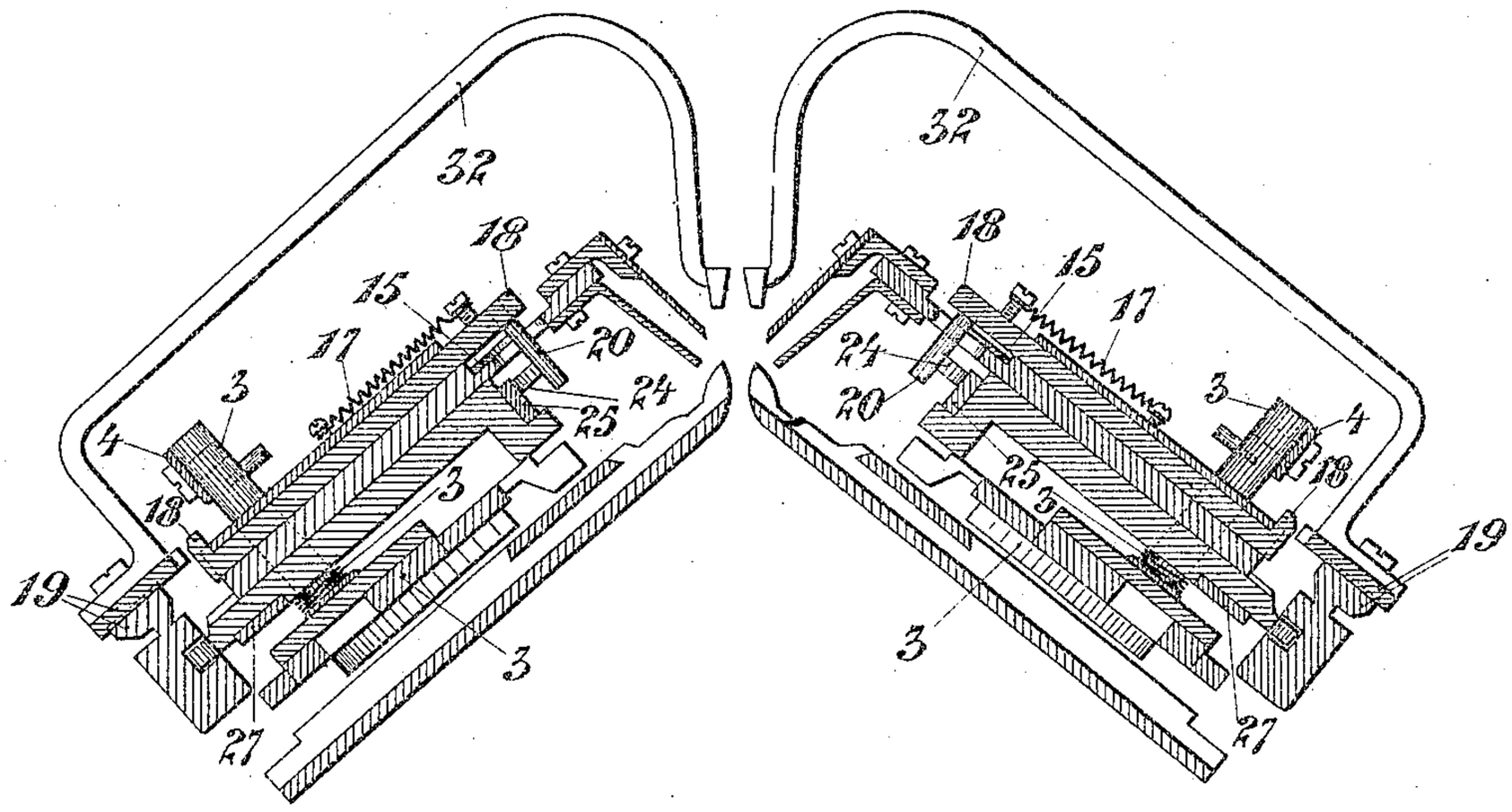


Fig. 8.



Witnesses
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No. 775,742. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

WILHELM BACH, OF APOLDA, GERMANY.

CAM DEVICE FOR LAMB KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 775,742, dated November 22, 1904.

Application filed October 20, 1903. Serial No. 177,805. (No model.)

To all whom it may concern:

Be it known that I, WILHELM BACH, manufacturer, a subject of the Grand Duke of Saxe-Weimar, residing at Apolda, in the Grand Duchy of Saxe-Weimar, German Empire, have invented certain new and useful Improvements in Cam Devices for Lamb Knitting-Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in cams for Lamb knitting-machines; and the object thereof is to provide means capable of being used to knit one course alternately on each needle-bed without traversing the thread-guide from one bed to the other at the end of a course, so as to knit two flat fabrics which may or may not be fashioned and which have selvages; furthermore, to operate the central cam-adjusting stud in such a manner as to render the needles of the particular bed involved idle and to throw the thread-guide for the same bed out of action when the said stud is operated.

A cam for a Lamb knitting-machine constructed in accordance with this invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section. Fig. 2 is an under side view. Fig. 3 shows the cam in plan, the two central cam-adjusting studs being shown lowered, the front thread-guide switched or turned out, but the back thread-guide switched in, the stopping device of the latter being released. Fig. 4 also shows a plan of the cam, but with the central cam-adjusting studs of both sides of the cam raised and the thread-guides switched out but not secured. Fig. 5 shows the cam in plan with the central studs lowered, the front thread-guide switched in and secured in that position, and the back thread-guide switched out and also secured in that position. Fig. 6 shows another plan of the cam with the central studs switched out or raised both in front and at the back, and the thread-guides switched out on both sides and secured in those positions. Figs. 7 and 8 illustrate vertical sections through the knitting-machine.

The well-known ratchet-wheels 2, arranged at each side of the cam and advanced by the pawls 1 after each complete reciprocation, are provided in addition to their teeth 6 with the cam-surface 7 for controlling the central cam-adjusting studs 3 through the medium of the levers 4, pivoted at *x*. The levers 4 are provided with guide-rollers 5, and the wheels 2 are also provided with cams 8. These latter act on a rounded projection 10, which is adjustably connected, by means of the set-screws 9, to one end of a lever 12, pivoted at 11 to the cam or slide casing. The other end of the lever 12 has hinged to it at 13 a slide 15, which has its free end provided with a cam-face 14 and behind said cam-face 14 with a recess *y*. The lever 15 is acted upon by a spring 16 in such manner that the adjustable projection 10 of the lever 12 is normally pressed against the cams 8 of the ratchet-wheel 2, Fig. 3. The free end of the slide 15 acts on the driver 18 of the thread-guide or thread-guide bar 19. Said driver 18 is in the form of a slide and is constantly held by a spring 17 in a lowered position. At the upper end of the thread-guide driver 18 is arranged for this purpose a downwardly-projecting pin 20, which is acted upon at the proper time by the cam-face 14 of the slide 15, so that the thread-guide driver is moved in or out.

The driver 18 acts merely as a tappet for the thread-guide rail, provided with projections 19, which rail or bar (as will be seen in Figs. 7 and 8, which are vertical sections through the knitting-machine) carries in the well-known manner or is secured to the thread-guide proper, 32. When therefore the driver 18 or thread-guide tappet is moved so that it is engaging between the projections (teeth) 19 of the thread-guide bar, Figs. 1, 3, 7 on the right and Fig. 5 on the left, when the slide of the knitting-machine moves the thread-guide 32 is forced to participate in its movement. The thread-guide 32, and consequently its bar or rail and its projections 19, remain, however, stationary when the driver 18 does not engage between the projections 19. (See Figs. 4 and 8 on the left and on the right hand side.)

If it is desired that the thread-guide driver be moved in or out simultaneously with the

central stud 3, the slide 15 is allowed to move freely. If, on the contrary, it is desired that the central stud 3 should work and the thread-guide be switched out, the driver 18 of the thread-guide is secured in its upper position (see Fig. 6) by the securing of the slide 15 through the medium of a hand-lever 21, retained in position by a pin 22, which engages behind the said lever 21 when the slide 15 is in such position that the projection 10 of the lever 12 can no longer be reached by the cams 8 of the ratchet-wheel 2 when the latter is rotating. The slide 15 is therefore prevented by the lever 21 and the pin 22 from escaping from its secured inoperative position, while the thread-guide driver 18 is itself prevented from returning to the operative position, Figs. 2 and 6, by its pin 20 being raised on a projection 24, having a cam-face 23, said projection 24 being carried by a slide 25, provided with a handle 26.

When it is desired to release the thread-guide driver 18, the slide 25 is placed in such position that the pin 20 of the driver 18 is no longer raised by the projection 24 of the slide 25. (See Fig. 2.) The operation is similar for releasing the slide 15, the hand-lever 21 being raised, whereupon the pin 22 of the slide 15, withdrawn by the spring 16, comes in front of the hand-lever 21. (See Figs. 3 and 4.)

The thread-guide driver 18, with the switched-out slide 15, is secured in inoperative position by the pin 20 of the driver 18, engaging with the recess *y* of the slide 15, Fig. 5, front.

The spring-pawl 1 of the ratchet-wheel 2 is mounted at the end of a rail 27, longitudinally movable on the cam, provided with a downward tappet 28, adjustable in the longitudinal direction of the said rail and striking a spring-pin 29 of the slide-guide after every reciprocation of the slide, whereby the rail 27, normally held in the position illustrated by means of a spring *f*, is moved and the ratchet-wheel 2 operated by its pawl. The spring-pin 29 can be moved by means of a hand-lever 31, provided with a wedge-shaped projection 30, in such manner that it either projects into the path of the tappet 28 or does not come in contact with it during the movement of the slide or cam.

Z is a stop-pin on the bar 27, controlling its extreme position.

The driving device for the pawl 1 or the ratchet-wheel 2 is well known and does not form part of this invention, which relates only to the device enabling the thread-guide to be simultaneously thrown in or out of gear with the throwing in or out of gear of the central lever 3.

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 cam for Lamb knitting-machines, means for throwing the thread-guide into and out of gear simultaneously with the throwing into and out of operation the central cam-adjusting stud, said means comprising a thread-guide driver, a slide adapted to engage said driver for actuating it, a lever connected with said slide and adapted when operated to actuate the slide, and means engaging with said lever for operating it.

2. In a cam for Lamb knitting-machines, means for throwing the thread-guide into and out of gear simultaneously with the throwing into and out of operation the central cam-adjusting stud, said means comprising a thread-guide driver, a slide adapted to engage said driver for actuating it, a lever connected with said slide and adapted when operated to actuate the slide, means for throwing into and out of operation the cam-adjusting stud, and operating means for said lever and the means for throwing the cam-adjusting stud into and out of operation.

3. In a cam for a Lamb knitting-machine, means for automatically throwing the thread-guide into and out of gear simultaneously with the throwing into and out of operation of the central cam-adjusting stud.

4. A cam for a Lamb knitting-machine comprising means for throwing the thread-guide into and out of gear simultaneously with the throwing into and out of operation the central cam-adjusting stud, said means comprising a thread-guide driver, a slide having a cam-face adapted to engage with said driver to actuate it, a lever connected with said slide and provided with an adjustable projection and adapted when actuated to operate said slide, and means engaging said projection, causing thereby the actuation of said lever.

5. A cam for a Lamb knitting-machine comprising means for throwing the thread-guide into and out of gear simultaneously with the throwing into and out of operation the central cam-adjusting stud, said means comprising a thread-guide driver provided with a pin, a slide having a cam-face adapted to engage said pin to actuate the driver, a lever connected with said slide and provided with an adjustable projection and adapted when actuated to operate said stud, and means engaging said projection for causing the actuation of the lever.

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

WILHELM BACH.

Witnesses:

PAUL LEICHMANN,

MAX MEYER.