

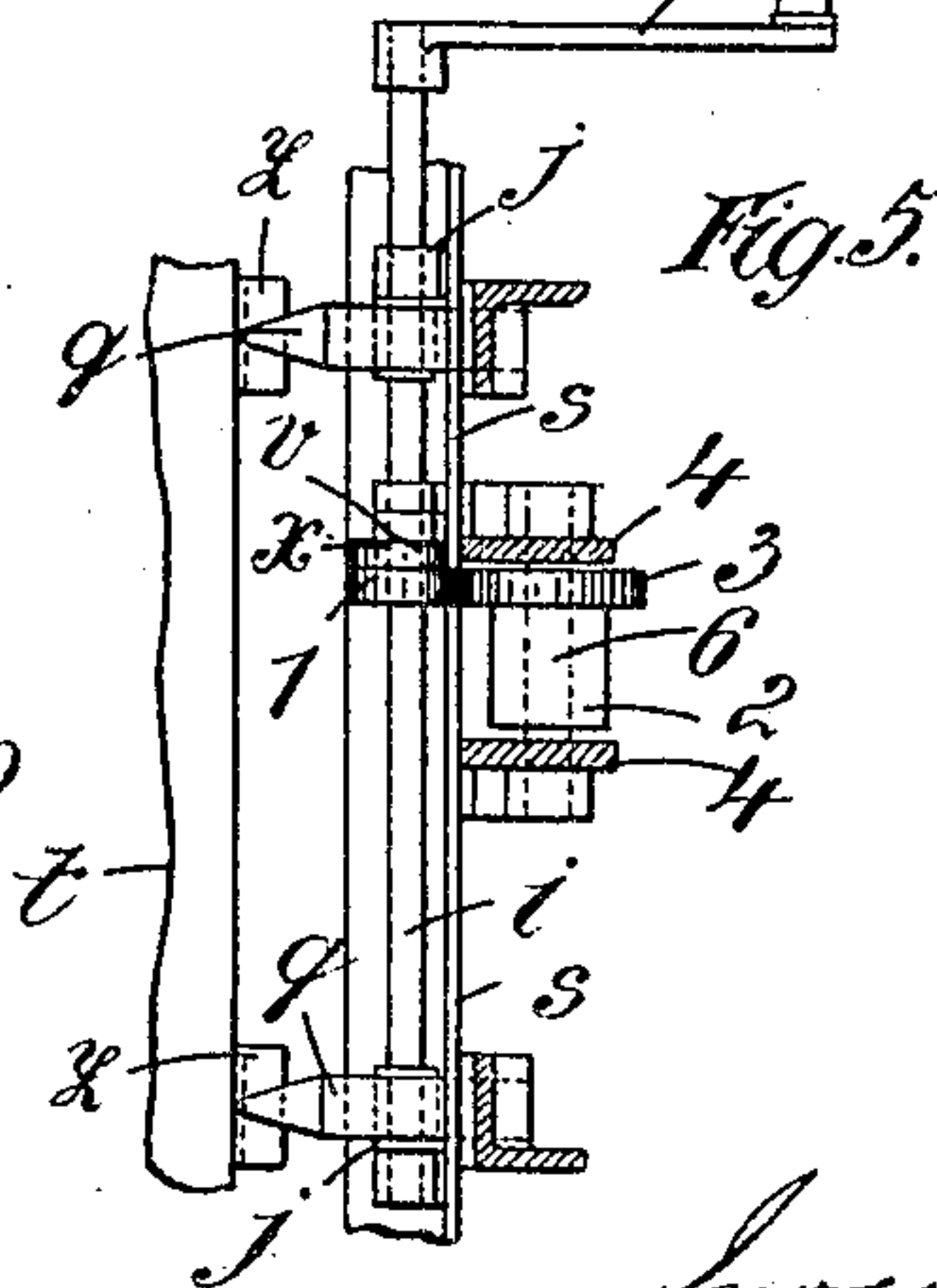
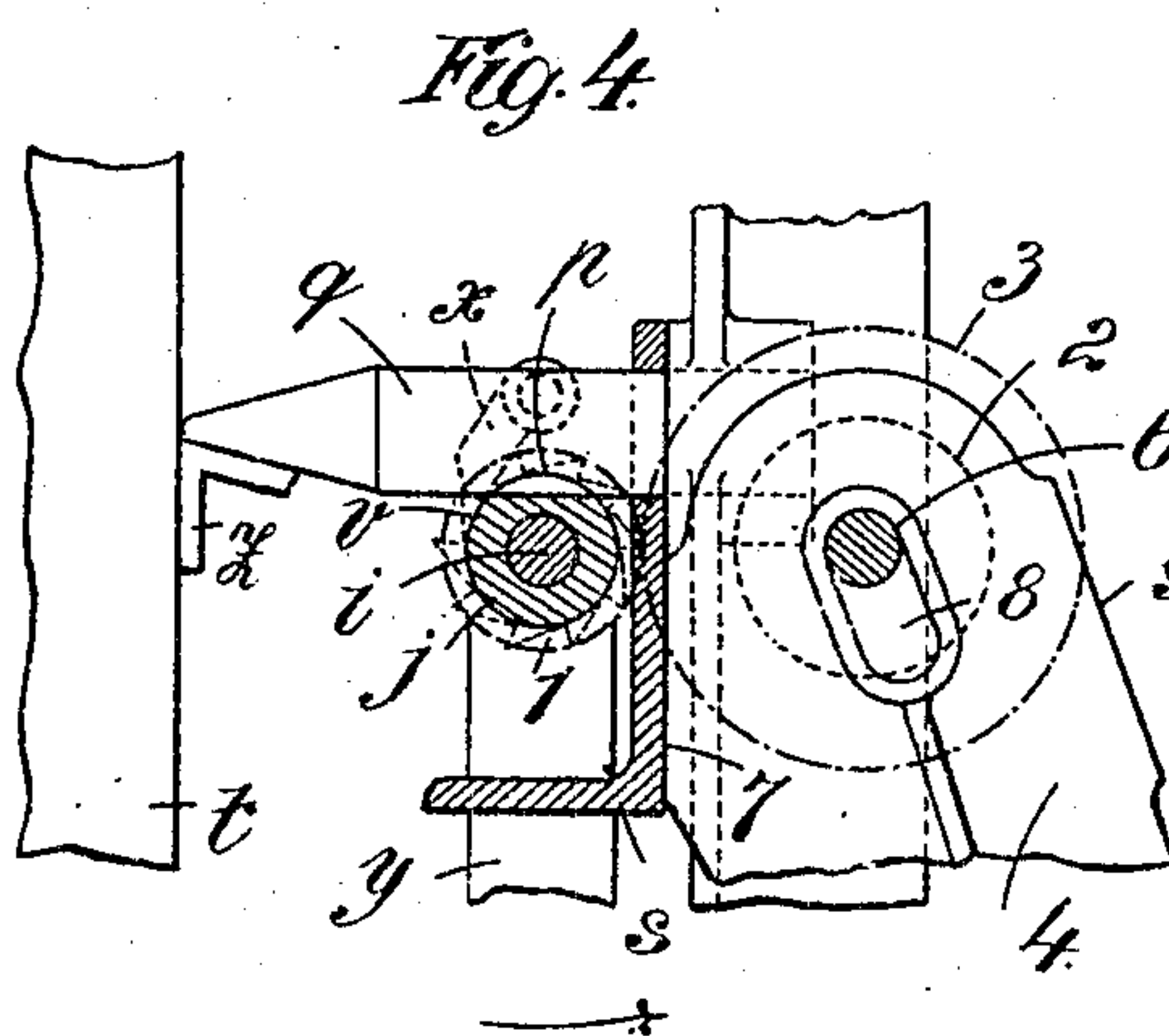
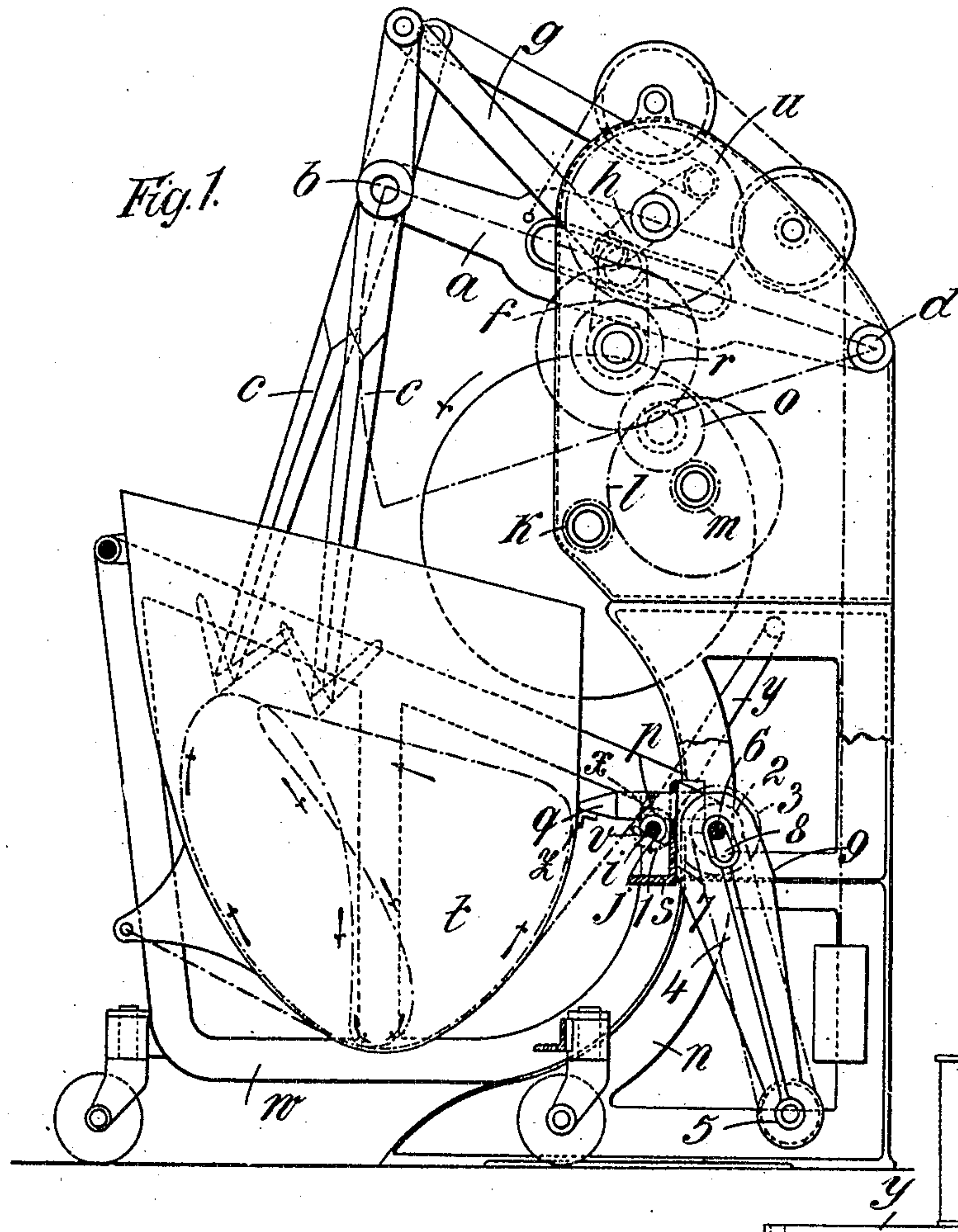
No. 843,468.

PATENTED FEB. 5, 1907.

C. LAURICK.
MIXING AND KNEADING MACHINE.

APPLICATION FILED JUNE 5, 1906.

3 SHEETS—SHEET 1.



Witnesses:
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C. H. King

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Carl Laurick

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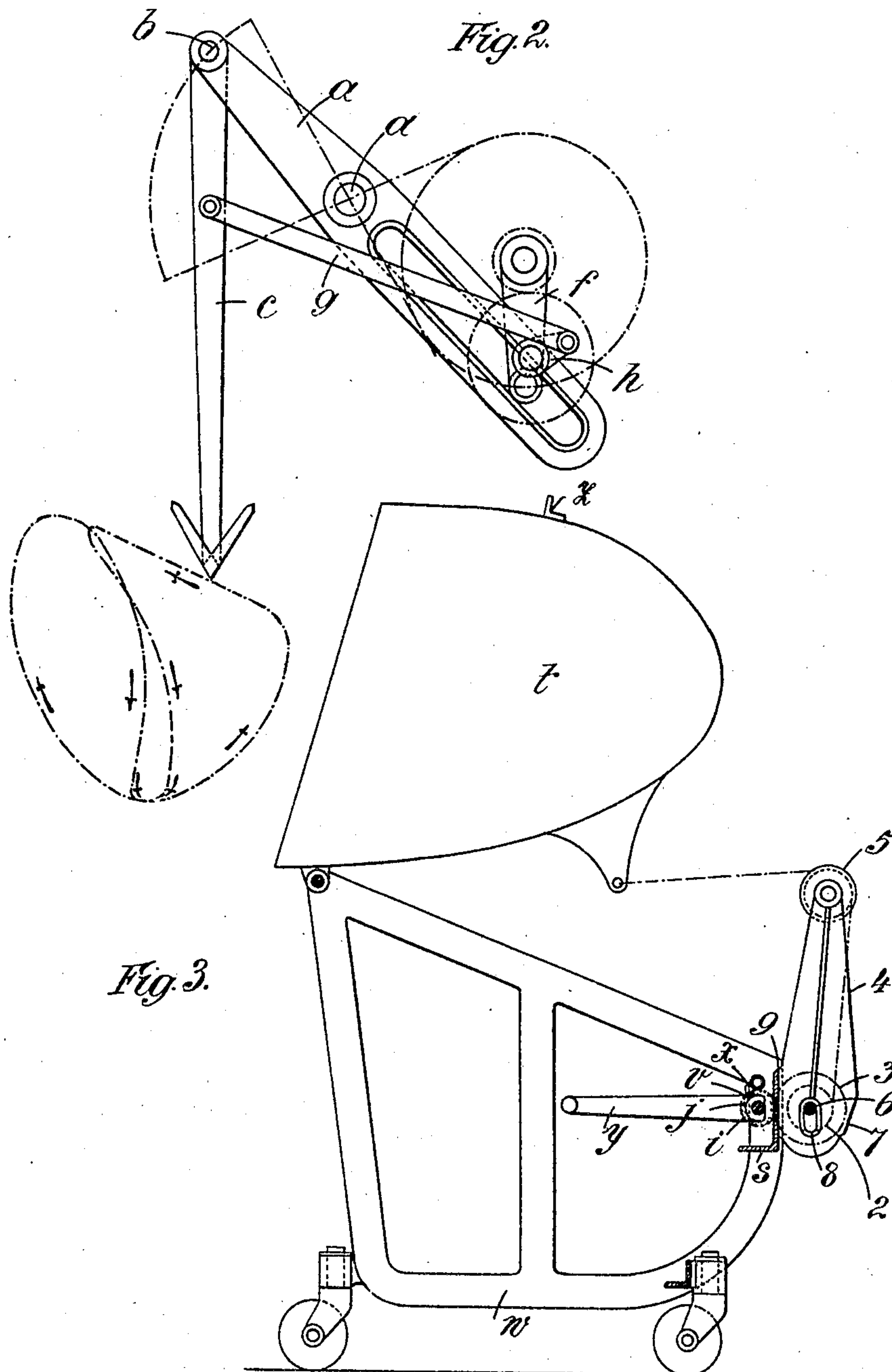
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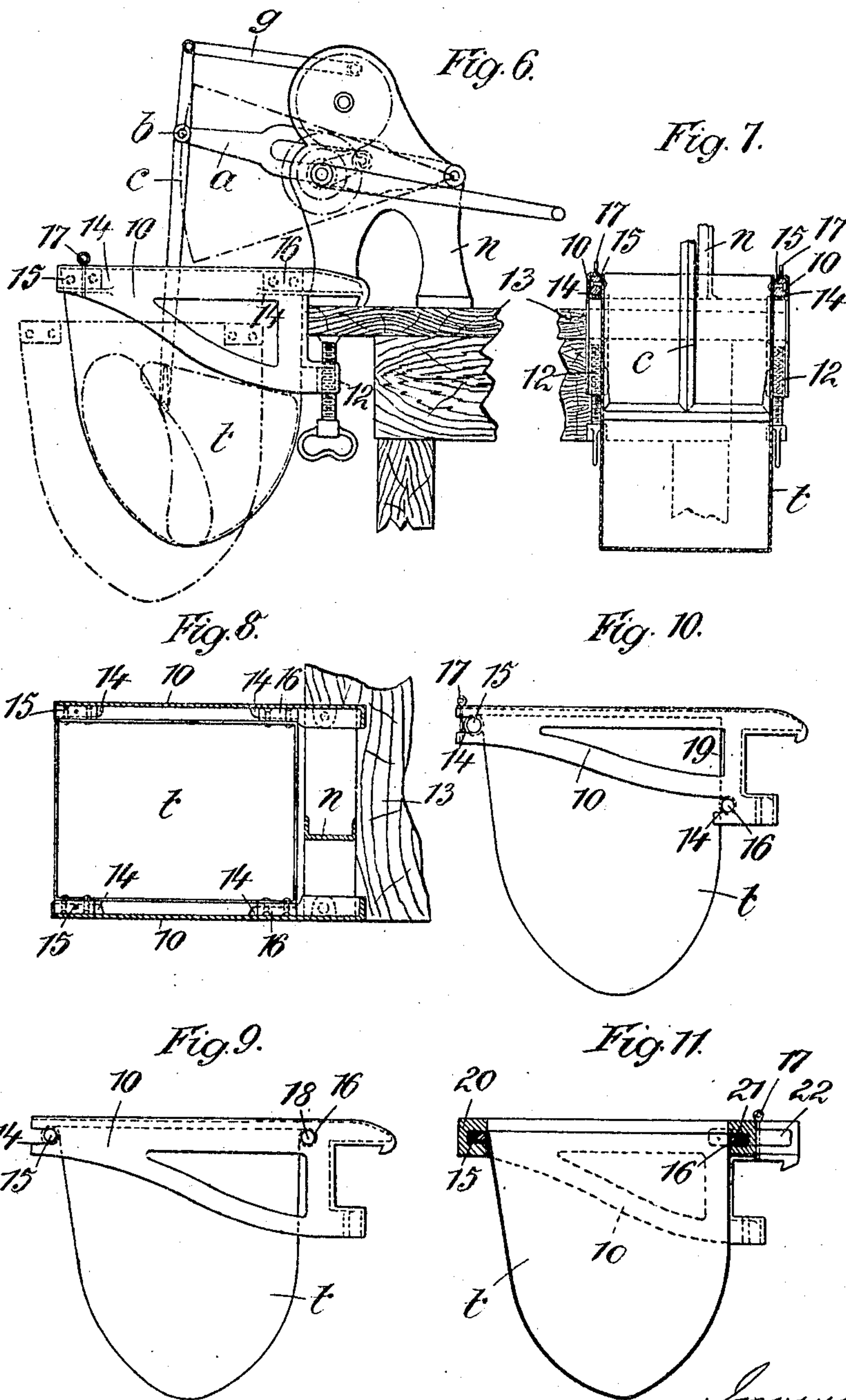
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CARL LAURICK, OF BERLIN, GERMANY.

MIXING AND KNEADING MACHINE.

No. 843,468.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed June 5, 1906. Serial No. 320,327.

To all whom it may concern:

Be it known that I, CARL LAURICK, a subject of the King of Prussia, German Emperor, and residing at Berlin, German Empire, have invented certain new and useful Improvements in Mixing and Kneading Machines, of which the following is a specification.

This invention relates to a mixing and kneading machine for dough-like and other substances, which machine has mixing and kneading arms set in oscillation by means of cranks and moved up and down by a lever.

The characteristic features of the invention consist in the up-and-down-moving single or double armed lever being only pivotally, but not displaceably, mounted on its axis of rotation and carrying the rocking axis of the mixing and kneading arms without separate guides and also in the method of connecting the trough with the kneading-machine in conjunction with a mechanism for lifting the trough.

Several forms of construction of the machine are shown in the accompanying drawings, Figure 1 being a side view and partial section of a form of construction of the machine intended for mixing and kneading-machines of large dimensions; Fig. 2, a side view of a modified form of construction of the means for operating the mixing and kneading arms; Fig. 3, a side view of the trough-carriage uncoupled from the machine and the winding-up mechanism when the kneading-trough is elevated or drawn up. Fig. 4 is a side view and partial section, on an enlarged scale, of the coupling device shown in Fig. 1; Fig. 5, a plan view of the latter; Fig. 6, a side view of a form of construction of the machine intended for mixing and kneading machines of small dimensions—for instance, for household use and also for apothecaries, druggists, glaziers, painters, and the like. Fig. 7 is a vertical cross-section, and Fig. 8 a horizontal section, while Figs. 9, 10, and 11 illustrate modified means of attaching the trough.

The rocking axis *b* of each mixing and kneading arm *c* is carried by a lever *a*, adapted to be rocked up and down on a fixed point of rotation *d*. The mixing and kneading arms *c* are rocked to and fro on their axis of rotation *b* by means of cranks *h* and push-rods *g*. The rocking of the lever *a*, carrying the mixing and kneading arms *c*, is operated by means of a crank *f*, which revolves twice

as fast as the cranks *h*, whereby the path of movement of the kneading-arms described in my former United States Patent No. 805,020 is produced. The cranks *f* and *h* are operated in a similar manner to that described in the said patent by toothed wheels *k*, *l*, *m*, *o*, *r*, and *u*.

Fig. 1 shows the lever *a* as a single-armed lever, and Fig. 2 as a two-armed lever. Accordingly in Fig. 1 the mixing and kneading arms *c* are double, and in Fig. 2 single, armed levers, and the push-rods *g* in Fig. 1 engage with the upper end of the arms *c*, while in Fig. 2, on the other hand, they engage with the single arm *c* beneath its point of oscillation *b*, whereby in both cases the same kind of movement of the lower ends of the kneading-arms is produced.

In Figs. 1, 3, 4, and 5, *i* is a shaft revolvably mounted in the frame *n* of the machine and serving both for firmly coupling the kneading-trough carriage *w* with the frame *n* of the mixing and kneading machine and also for winding up the kneading-trough *t*. On both sides coupling-sleeves *j* are fast on this shaft, which sleeves are each provided with a flattened part on their periphery. In the coupling position, in which the kneading-trough carriage *w* is held connected to or mounted on the underframe *n* of the kneading-machine, Fig. 1, the round part of the sleeves *b* is in engagement with a recess *p* in the holding-bolts *q*, which fit into adjusting-holes of the bars *s* of the trough-carriage. In this position of the coupling the engagement of the coupling-sleeves *j* in the recesses *p* is secured by means of a ratchet-wheel *v*, Fig. 4, fast on the shaft *i*, and a pawl *x*, mounted on the bar *s*, engaging with this ratchet-wheel. This also prevents the driving-crank *y*, mounted on the shaft *i*, moving downward by reason of its own weight and turning the shaft *i*. It is advisable to arrange the crank *y* in such a way that it hangs downward in the uncoupling position. As soon as the trough-carriage *w* has run close to the underframe *n* of the kneading-machine and the coupling-sleeves *j* stand completely beneath the recesses *p* of the retaining-bolts *q* about a quarter-rotation of the crank *y* in the direction of the arrow shown in Fig. 4 suffices to bring the round surfaces of the sleeves *j* into engagement with the recesses *p* of the retaining-bolts *q*, the coupling being effected in the manner shown in Fig. 1. The sleeves *j* of

the trough-carriage cannot then escape from the bolts *q*. In order to uncouple, it is necessary to withdraw the pawl *x* from the ratchet-wheel and turn the crank *y* in an opposite direction to the direction indicated by the arrow in Fig. 4 until the round surfaces of the sleeves *j* emerge from the recesses *p* of the bolts *q* and the flattened parts of the sleeves lie underneath the latter. The bolts *q* are also further intended to prevent the kneading-trough when the trough-carriage is connected with the kneading-machine from being lifted by the kneading-arms during the operation of kneading. This object is attained by projections *z* being provided on the kneading-trough, over which projections the bolts *q* engage, and thus prevent the kneading-trough being lifted. A toothed wheel 1 is mounted on the shaft *i*, which wheel gears with a toothed wheel 3, fast on the winding-drum 2. In order that the supporting-arm 4 for the cord-pulleys 5 may not be in the way during the coupling of the trough-carriage *w* with the kneading-machine, they are adapted to be turned on the shaft 6 down into the dependent position shown in Fig. 1. In order that the arm 4, with the cord-pulleys 5, may not encounter the ground in their dependent position, the arms 4 are provided with a contact-surface 7, which in the turned-down position of the arms bear against the bars *s* of the trough-carriage and retains the arms in their inclined position. If, however, the arms 4 be turned up into the position shown in Fig. 3, after the release of the coupling of the trough-carriage from the kneading-machine, the slots 8 of these arms slide over the shaft 6, while a second contact-surface 9 on the arms also bears against the bars *s* and is thus supported in an erected position.

In Figs. 6, 7, and 8 brackets 10, situated on both sides of the trough *t*, are removably mounted on the frame *n* of the machine by overlapping the base of the frame at 11 or in other suitable removable manner. The brackets 10 are provided with screw-clamps 12, by means of which when the brackets 10 are placed on the frame *n* of the machine the machine may be screwed to a table-top or the like 13, so as to be brought into use. Each of the brackets 10 contains a horizontal guide 14, which is broken in the middle in such a way that the trough, which is provided on each side with two projecting supports 15 13, may be lifted from below into the guides 14, (see the position shown in dotted lines of the trough *t* in Fig. 6,) the rear projecting supports 16 of the trough *t* being able to enter the guides 14 through the central interruptions or openings in the latter. The trough *t* is then pushed back (in Fig. 6 to the right) into the guides 14 until it has assumed its correct position therein, and then the trough is carried in the guides 14 by its projecting supports 15 16 and is thereby attached to the

machine in the necessary way. Any displacement of the trough *t* during the working of the machine in the guides 14 may be prevented by means of pins 17 or the like inserted in the guides, which pins may be passed through the front projecting supports 15 of the trough *t* and through the guides 14. In the reverse operation by displacing the trough *t* forward (in Fig. 6 to the left) until the rear projecting supports 16 of the trough lie over the central interruption of the guides 14, and by then moving the trough downward, the trough is removed from the machine. It is thus possible to easily bring the trough into connection with the machine and again separate it therefrom without the mixing and kneading arms *c*, which project into the trough, having to be removed; but, on the contrary, these arms *c* may remain in the position shown in Fig. 6, in which they extend into the trough, and also there is no necessity to turn upward the entire mechanism for moving the kneading-arms together with the latter. After the removal of the trough from the brackets 10 and the withdrawal of the latter from the machine-frame *n* these parts may be suitably laid beside the machine and conveniently transported and stored with the latter. Mixing and kneading machines of small dimensions may thereby be made as small as possible for household and like purposes.

The projections 15 and 16 for supporting the trough may be provided in any suitable manner, either by separately riveting them on, as shown, fastening by means of screws or other separate and suitable attachments of these projections to the trough-wall, or even by simply flanging round the wall of the trough to form projecting supports. Similarly any suitable way of forming the guides 14 may be adopted instead of being formed, as shown, by ribs formed on the brackets 10. They may also be formed as partial bayonet-slots suitably formed therein. Vice versa, the projections 15 may be formed on the brackets 10 and the guides 14 on the trough *t*. The attachment of the trough to the mixing and kneading machine may also be effected by first inserting the trough in the brackets 10 and then attaching the brackets 10 to the machine-frame *a*.

Figs. 9, 10, and 11 show three further separate forms of construction of the attachment of the trough *t* to the brackets 10. In Fig. 9 a short jaw or mouth like guide 14 is provided on the front end of the brackets 10, and the trough *t* has two corresponding support-pins 15 at both sides in front. By means of these pins the trough *t* is inserted in the mouth or jaw like guides 14. At the rear end there are eyelets 16 in the trough, which may, if desired, also be formed by flanging round the material of the trough-wall. By means of bolts 18 or the like, which are inserted in the

eyelets 16 of the trough and in holes in the brackets 10, the trough may be held fast at the rear end of the brackets.

In Fig. 10 the brackets have jaw-like guides 14 in front and at the rear, in which guides the support-pins 15 and 16 of the trough *t* are inserted. In order that the trough when being brought up to the mixing and kneading arms *c* may pass them, the upper part 19 of the rear trough-wall is adapted to be folded down or is made removable.

In the form of construction shown in Fig. 11 the trough *t* is lifted and inserted in two cross-bars 20 21, arranged in the front and rear of the brackets 10 and extending from one bracket to the other, one of which cross-bars—for instance, 20—may be fixed to the brackets 10, and the other—for instance, 21—may be displaceably mounted on the brackets 10 in slots 22 or otherwise, and both of which cross-bars have recesses for the projecting supports 15 and 16, provided on the front and rear of the trough *t*. The projection 15 of the trough *t* is inserted in the recesses of the one cross-bar 20, after which the other cross-bar 21 is pushed up to the trough until its other projection 16 engages in the recess of this cross-bar. By means of the insertion-pins 17 these cross-bars are thus secured against slipping back in the manner shown in the drawings. Both bars 20 and 21 may also be displaceably mounted on the brackets 10.

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

1. In a mixing and kneading machine, the combination with the trough, vertically and laterally swinging mixing and kneading arms, a vertically-swinging carrying-lever having a fixed fulcrum-point and pivotally connected with a mixing and kneading arm,

a rotating operating-crank arranged to oscillate the carrying-lever for each arm, a push-rod for each mixing and kneading arm, and a separate operating-crank for the push-rod, the cranks for the push-rods and the carrying-levers rotating respectively at different speeds.

2. In a mixing and kneading machine, the combination with the machine-frame and the mixing and kneading arms, of a trough-holder a coupling device for connecting the trough-holder with the machine-frame, a trough, a raising and lowering device for the trough, and a locking mechanism for the coupling comprising means for also operating said raising and lowering device.

3. In a mixing and kneading machine, the combination with the machine-frame, of a trough-carriage, a swinging trough mounted in the carriage, coupling-bolts supported by the carriage and arranged to engage the trough and also the machine-frame, a swinging raising and lowering device for the trough and a locking mechanism operatively engaging said bolts and geared with said raising and lowering device.

4. In a mixing and kneading machine, the combination with the machine-frame, of a trough-carriage, a swinging trough, coupling-bolts arranged to engage the trough and also the machine-frame, a swinging raising and lowering device for the trough, and a ratchet-held shaft carrying sleeve members arranged to interlock with the said bolts, and also having a geared connection with said raising and lowering device.

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

CARL LAURICK.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.