No. 797,916. PATENTED AUG. 22, 1905.

A. SAURER.

EMBROIDERING MACHINE.

APPLICATION FILED DEC. 27, 1904.

2 SHEETS—SHEET 1.

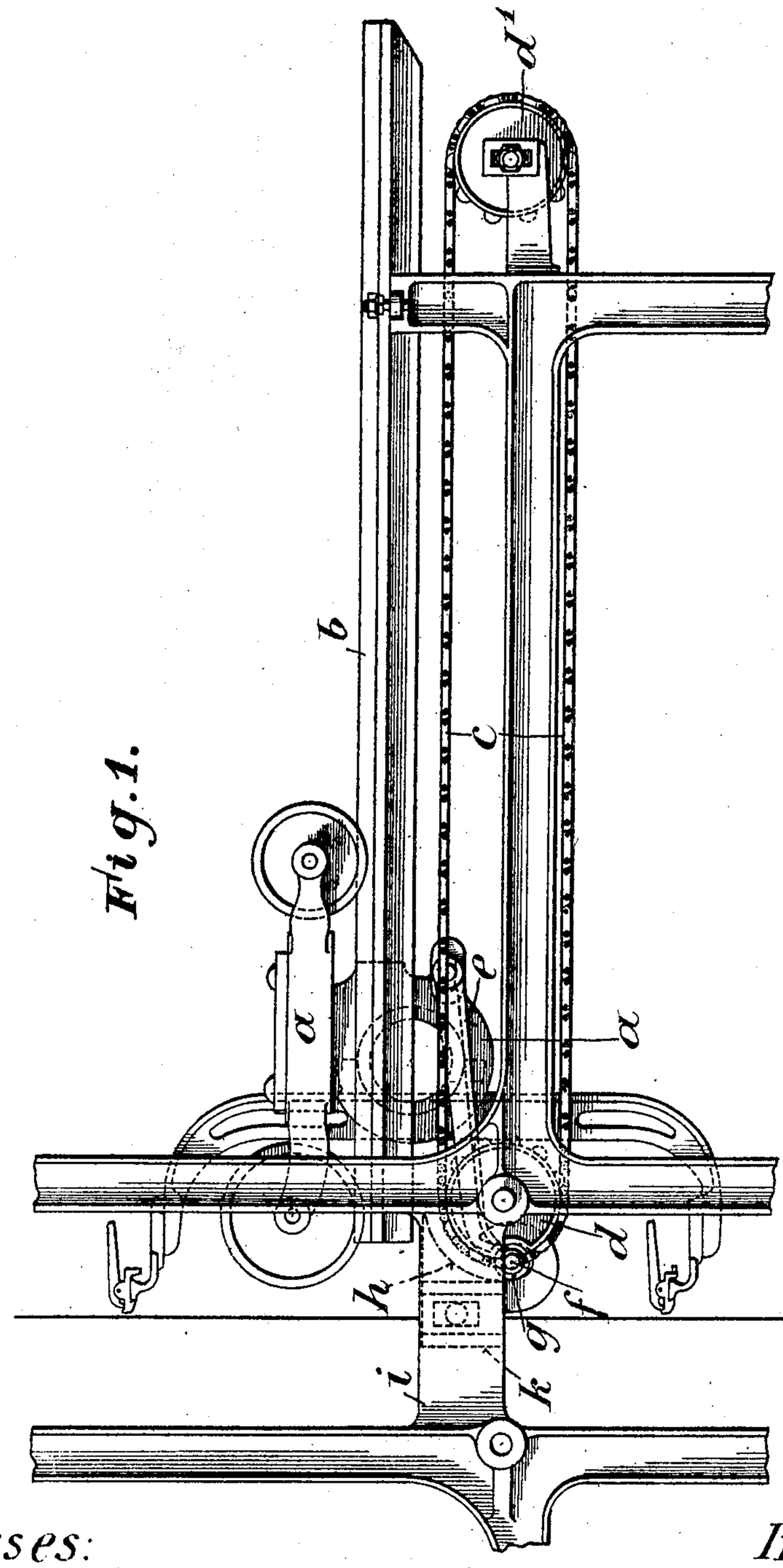

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

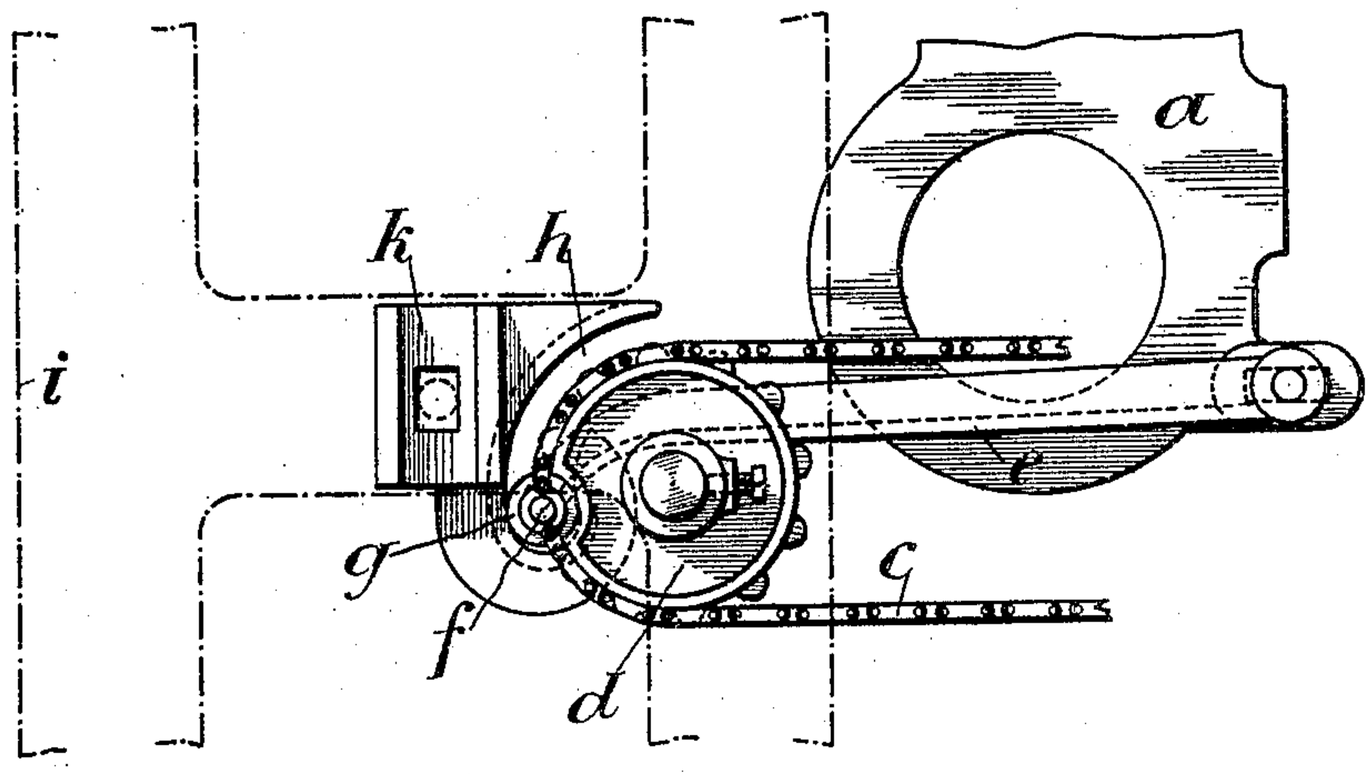
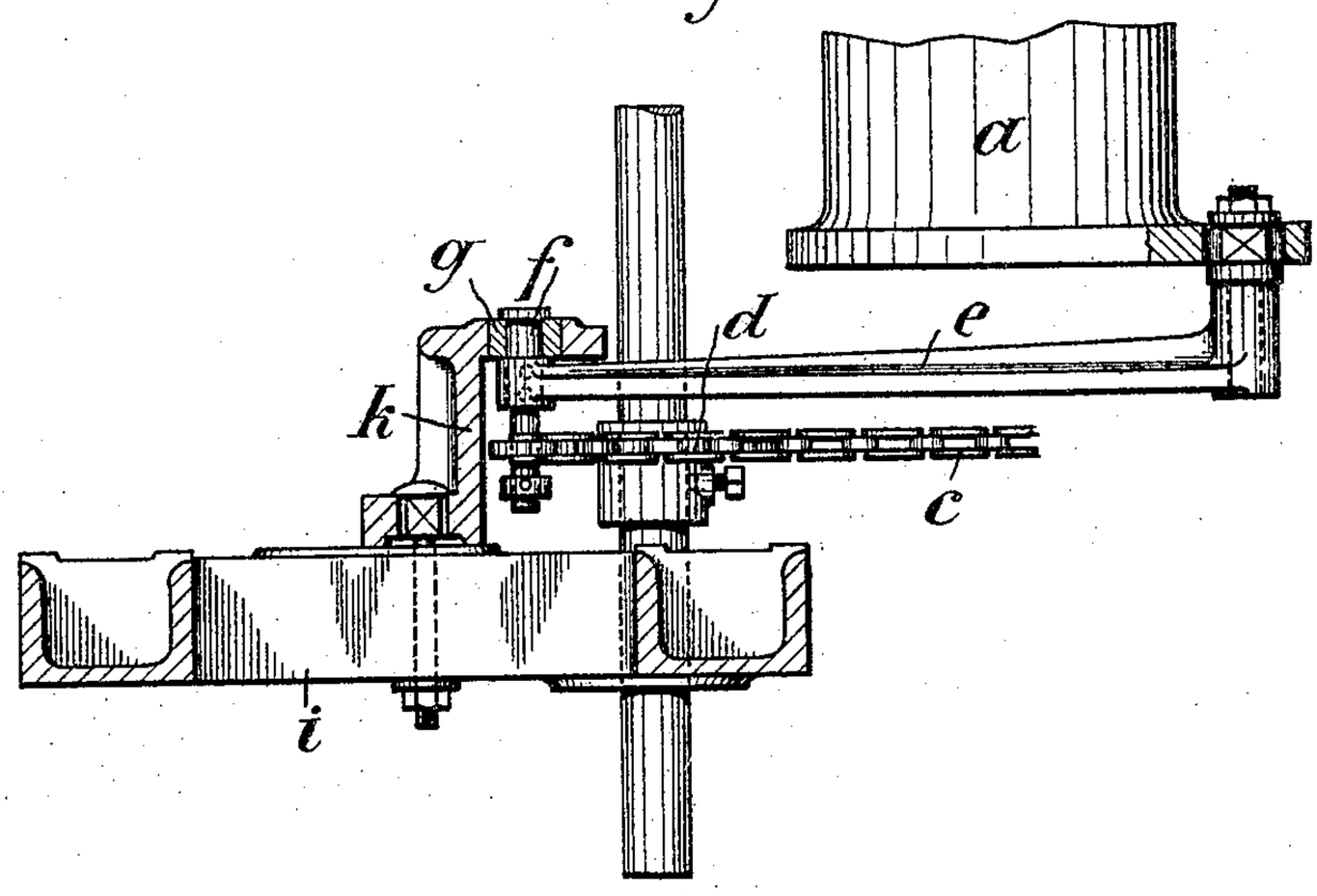


Fig. 3.



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UNITED STATES PATENT OFFICE.

ADOLPH SAURER, OF ARBON, NEAR ST. GALL, SWITZERLAND.

EMBROIDERING-MACHINE.

No. 797,916. Specification of Letters Patent. Patented Aug. 22, 1905.

Application filed December 27, 1904. Serial No. 238,486.

To all whom it may concern:

Be it known that I, ADOLPH SAURER, a citizen of the Republic of Switzerland, residing at Arbon, near St. Gall, Switzerland, have invented new and useful Improvements in Embroidering-Machines, of which the following is a specification.

My invention relates to improvements in hand embroidering-machines whereby the concussion of the carriages at the termination of its inward journey is effectually prevented by its motion being slightly retarded.

To this end the carriages are joined to chains, bands, or like flexible driving means by means of arms, the points of connection to the chains being at places which at the conclusion of the inward journey wind round sprocket wheels or pulleys.

Devices are also provided whereby the chain or band at the termination of the inward journey is prevented from being lifted from the wheels or pulleys owing to the inertia of the carriages and the elasticity of the chains or bands.

The accompanying drawings show one embodiment of my invention.

Figure 1 is a side elevation of so much of an embroidering-machine as will be necessary to illustrate my invention. Fig. 2 is an elevation of certain parts of the apparatus shown in Fig. 1, drawn to a larger scale. Fig. 3 is a sectional plan of Fig. 1, drawn to the same scale as Fig. 2.

a is a carriage traveling on rails *b*. *c* is a chain passing over the two sprocket-wheels *d d'*. *e* is an arm connecting the chain with the carriage. This arm embraces a pin *f*, projecting laterally from the chain *c* and carrying at its outer end a roller *g*. The latter runs in a slot *h*, located in a bracket *k*, secured to the frame of the machine, the said slot lying concentric to the axis of the sprocket-wheel *d*, as best seen in Fig. 2, in which the frame *i* is only shown in dotted lines, so as to display the parts located behind it.

Of course it will be understood that the devices described are duplicated on each side of a needle-carriage.

By turning the sprocket-wheel *d* by means of a crank-handle (not shown) affixed to the shaft thereof the chain and the carriage attached to it by the arm *e* will be caused to travel.

In order to prevent concussion on the carriage on concluding its inward journey, the place at which the arm *e* is jointed to the chain is one which winds onto the wheel at the conclusion of the inward journey. If now the wheel *d* should be turned at a regular rate by a crank-handle, as stated, until the end of the inward journey, the carriage will, nevertheless, travel the last portion of the journey at a decreasing speed. There is still another advantage attaching to this arrangement—namely, that at the commencement of the outward journey for the purpose of drawing the knots of thread through the fabric to be embroidered the moment of rotation of the handle need not be unduly great.

As will be seen, shortly before termination of the inward journey of the carriage the roller *g* enters the slot *h* and receives positive guidance from the latter. During the period that the roller is guided in the slot rising of the chains from the sprocket-wheel *d* through the inertia of the carriage and in consequence of the elasticity of the chains is impossible.

Instead of the chain it is obvious that any other flexible medium may be employed, such as a rope, strap, band, belt, or the like.

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

1. The combination with a needle-carriage of an embroidering-machine, drive-wheels and a flexible driving element driven by said wheels and connected to the carriage, of means to prevent the driving medium from being lifted off the drive-wheels by reason of the inertia of the carriage as it reaches the limit of its inward travel.

2. The combination with a needle-carriage of an embroidering-machine, drive-wheels, a flexible driving medium driven by said wheels and a connection between said medium and the carriage adapted to retard its speed as it reaches the limit of its inward travel; of means to prevent the driving medium being lifted off the inner drive-wheel by reason of the inertia of the carriage as it reaches the limit of its inward travel.

3. The combination with a needle-carriage of an embroidering-machine, drive-wheels, and a flexible driving medium driven by said wheels and connected to the carriage; of a guide having an arcuate guide-face concentric with the axis of rotation of the inner drive-wheel and means on the driving medium guided by said guide-face as the carriage is

about to reach the limit of its inward travel and preventing the driving medium being lifted off the inner drive-wheel.

4. The combination with a needle-carriage of an embroidering-machine, drive-wheels, a flexible driving medium and an arm connected to the carriage and to a pin on the driving medium at such a point as to cause said pin to travel partly around the inner drive-wheel before the carriage reaches the limit of its inward travel; of a bracket having an arcuate guide-face concentric with the axis of rotation of the inner drive-wheel to guide the aforesaid pin and prevent upward movement thereof.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ADOLPH SAURER.

Witnesses:
GEORGE E. LIGHT,
ERNEST DÜTSCHLER.