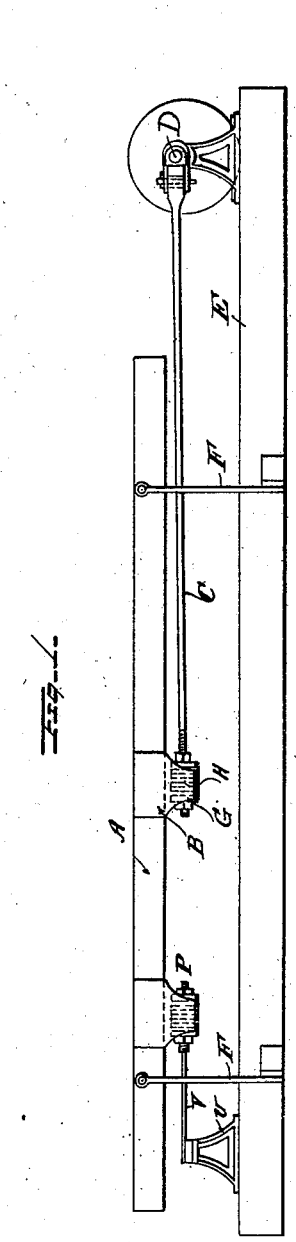
No. 676,246. Patented June 11, 1901.

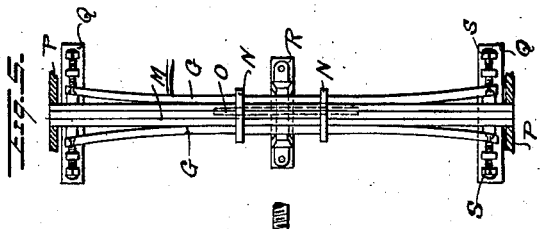
A. M. STRENGE.

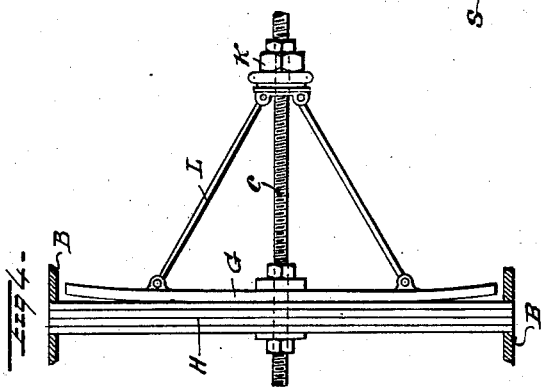
DEVICE FOR REGULATING THE ELASTICITY AND THROW OF RECIPROCATING PARTS.

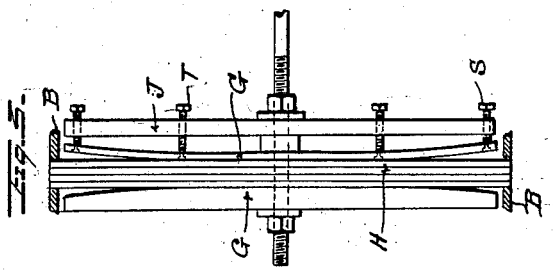
(Application filed Mar. 15, 1900.)

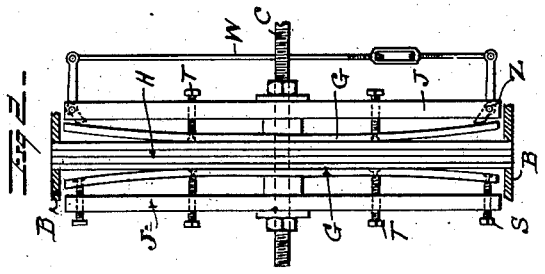
(No Model.)











Witnesses
A. J. Stadden
E. M. Moore.

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by his Attorney A. J. Stadden

UNITED STATES PATENT OFFICE.

AMANDUS MATTHIAS STRENGE, OF HAMBURG, GERMANY.

DEVICE FOR REGULATING THE ELASTICITY AND THROW OF RECIPROCATING PARTS.

SPECIFICATION forming part of Letters Patent No. 676,246, dated June 11, 1901.

Application filed March 15, 1900. Serial No. 8,808. (No model.)

To all whom it may concern:

Be it known that I, AMANDUS MATTHIAS STRENGE, a subject of the Emperor of Germany, residing at 23 Magdalenenstrasse, Hamburg, in the Empire of Germany, have invented certain new and useful Improvements in Devices for Regulating the Elasticity and Throw of Elastically-Reciprocating Machine Parts, of which the following is a specification.

In all methods hitherto known of elastically connecting reciprocating machine parts—for example, the sieves or equivalent parts of sifting, sorting, or transport apparatus or of sand-polishing machines which move backward and forward with the crank mechanism, by which movement is given them—the great disadvantage has been more or less apparent that with an increase in the number of strokes or in the loading of the apparatus the strain on the springs employed was considerably increased, and that consequently the said springs then permitted a longer throw than in the case of the normal number of strokes and normal loading. Experience proves that this circumstance diminishes the working capacity of the apparatus both as regards quality and quantity. Even in the case of apparatus with spring-bearings the irregular or uneven stroke is not avoided, because of the changes in the tension of the spring-bearings and in loading. The course traversed by the elastically-reciprocating part varies therefore according to the number of strokes and the loading and to the inertia imparted thereby to such part. This circumstance greatly interferes with the movement or treatment of the goods in question and often affects the apparatus itself.

The main purpose of the regulating device to which the present invention relates is to remove the above-mentioned disadvantages.

The object of the device, which is represented in the annexed drawings in various forms of construction, is attained by constructing or arranging the springs which connect the reciprocating part in question with the driving mechanism or other springs in such a manner that they will only permit a certain length of throw.

In Figure 1 of the annexed drawings the invention is represented in side elevation as adapted to a so-called "transport" apparatus, while Figs. 2 to 5 show in plan details of the stroke-limiting device or of the regulating device for the springs in various forms of construction.

The reciprocating part A in Fig. 1 is supported by the spring-arms F and is set in backward and forward motion by means of the crank-axle D and connecting-rod C. Between the connecting-rod C and the part A the spring H is provided, so that the part A can continue its course beyond the stroke of the crank-lever until it is brought up against the abutment G. The motion of the part A is therefore indirectly arrested by the crank-axle through rod C. It is different, however, when a spring with abutments is provided at P, as in Fig. 1, with attachment to a pillar U on the base E and the abutments of the spring between the connecting-rod C and part A are omitted. In this case the motion of the part A is directly arrested by means of the rod V and the base E. Like the connecting-springs the springs with regulating device can be variously constructed. The springs shown in Figs. 2 to 4 can be adapted to both purposes, while the spring shown in Fig. 5 is intended specially for the connection with the base E, the trestles Q and R, carrying the spring, being fixed to the base. In Figs. 2 and 3 the tension of the springs is regulated by means of the screws T, in Fig. 4 by means of the nut K, and in Fig. 5 by the rings N and the screw O. The regulating of the stroke, however, is effected in Fig. 2 by means of the draw-rod W and in the other figures by means of the screws S. By means of this device the throw of the part A can be limited in both directions to a certain fixed point even with variable load and number of strokes. By altering the tension of the springs and the limit of the stroke different varieties of stroke can be produced, and the difference can be produced in the out or back stroke, according to which end of the device is adjusted. Also, for instance, by limiting the stroke at one end only different speed in the motions in the two directions can be produced.

For certain purposes the adjusting devices will be superfluous if in the construction a suitable length of stroke is provided.

I declare that what I claim is—

1. The combination of a freely-reciprocating part, a positive reciprocating driving part, a spring intermediate of said parts, means for adjusting the tension of said spring and abutments for positively limiting the stroke of said freely-reciprocating part irrespective of the stroke of the driving part.

2. The combination of a reciprocating part A, a reciprocating rod C driving means for positively reciprocating the latter, a spring intermediate of parts A and C and adjustable abutments on one of said parts A C for limiting the flexion of said spring.

3. The combination of a freely-reciprocating part, a positively-reciprocating driving part, a spring intermediate of said parts and separately-adjustable abutments for limiting the stroke of said freely-reciprocating part independently in each direction irrespective of the stroke of the driving part.

4. The combination of a reciprocating part A, a reciprocating rod C, means for positively reciprocating the latter, a spring intermediate of said parts A and C, means for adjusting the tensile power of said spring and adjustable abutments on the rod C for limiting the flexion of said spring independently in each direction irrespective of the stroke of the driving part for giving transporting movement to the goods carried by part A.

In witness whereof I have signed this specification in the presence of two witnesses.

AMANDUS MATTHIAS STRENGE.

Witnesses:

E. H. L. MUMMENHOFF,

IDA HAFERMANN.