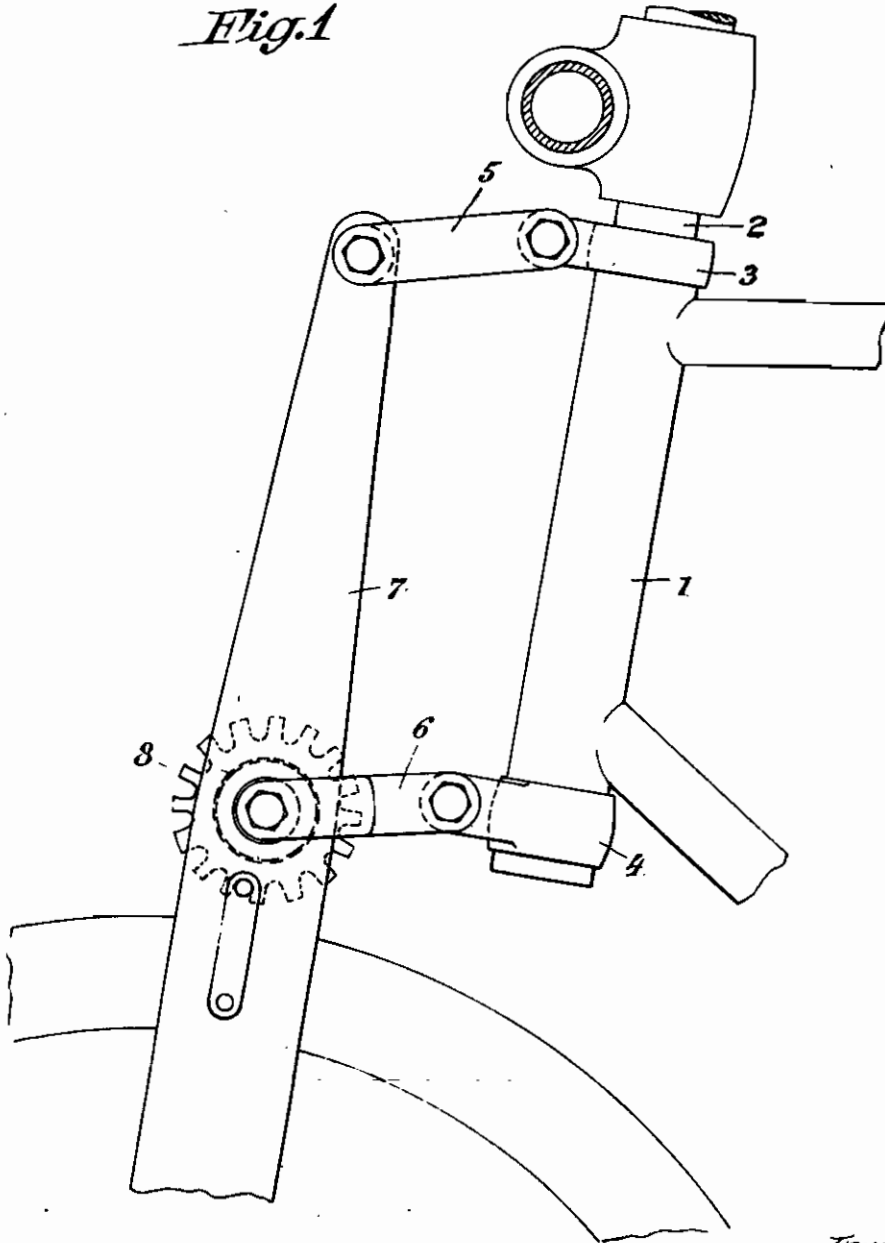


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390,182  
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*Fig. 1*



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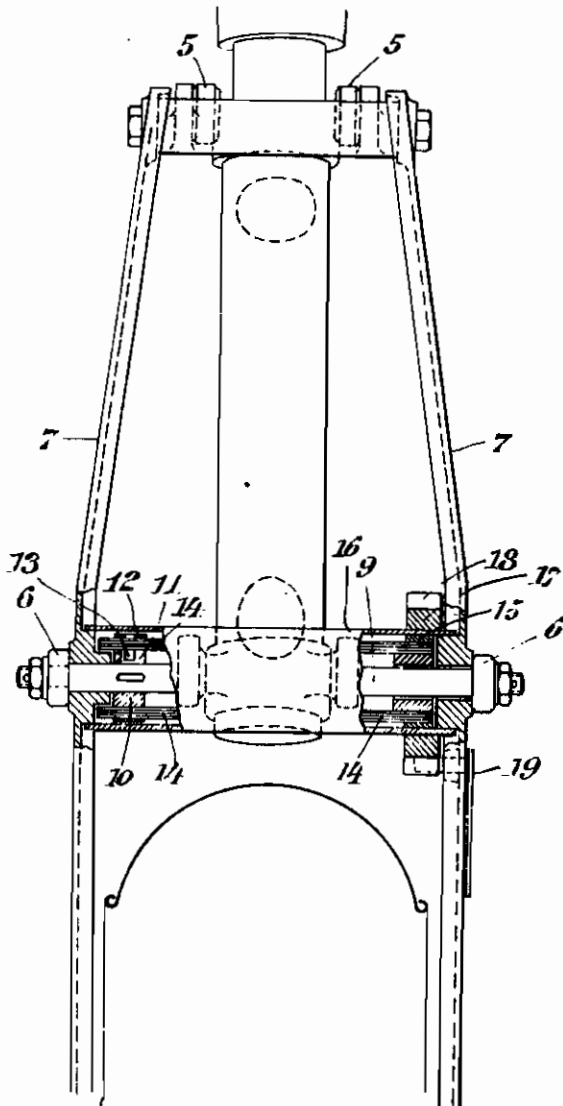
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*Fig. 2*



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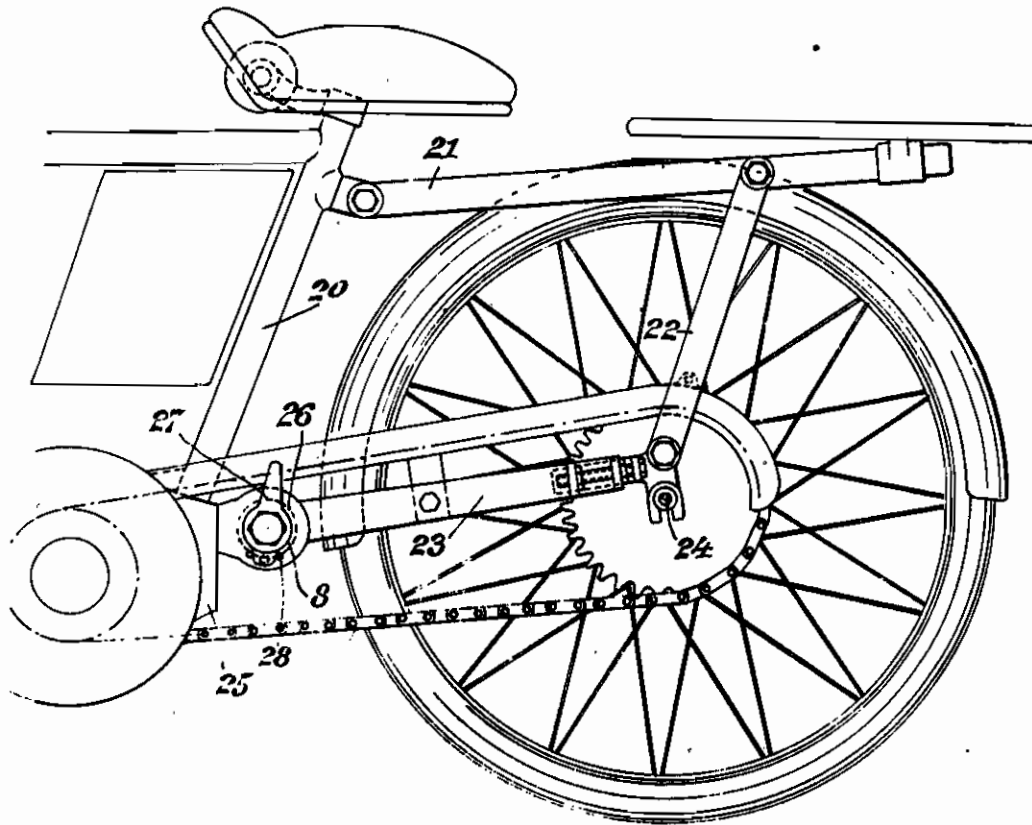
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*Fig. 3*



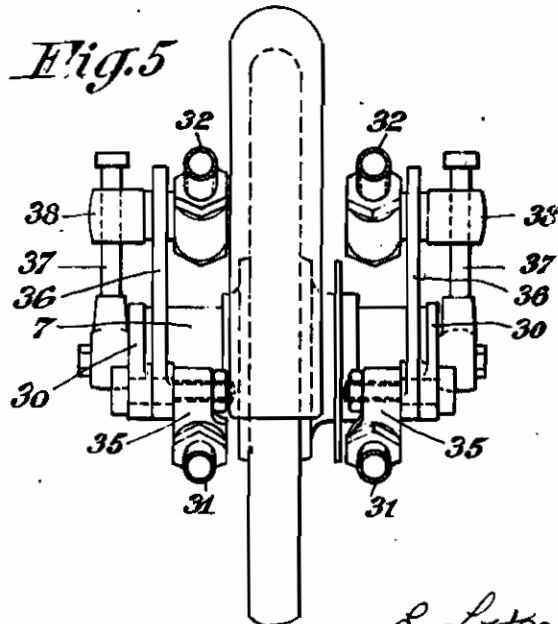
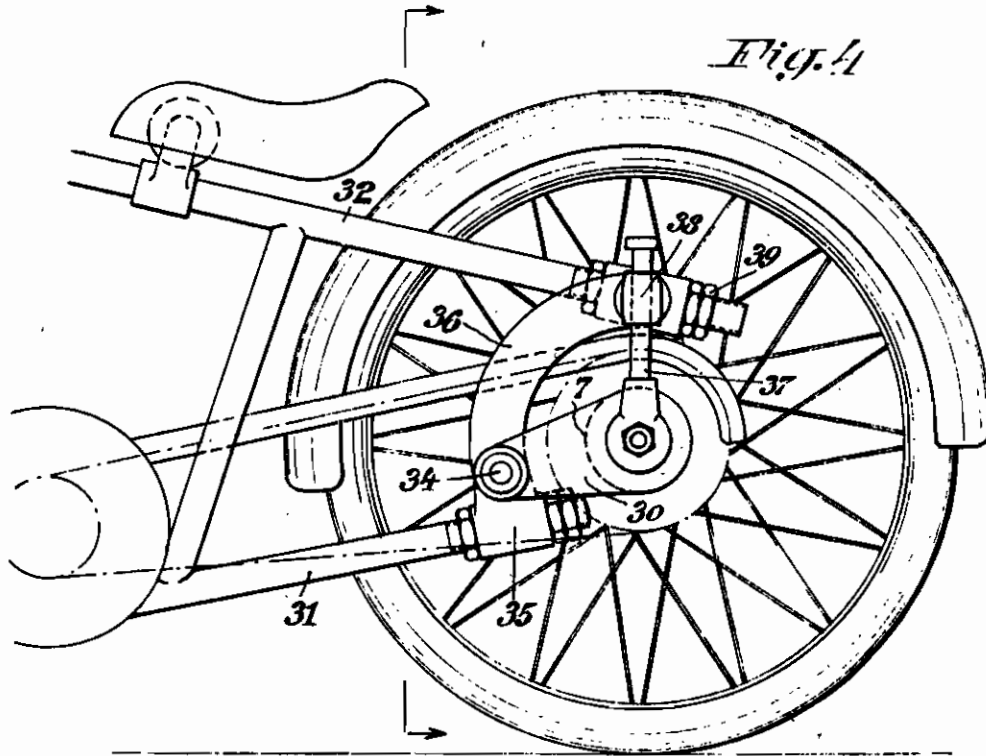
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# ALIEN PROPERTY CUSTODIAN

## MOTORCYCLE SPRINGING

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the Allen Property Custodian

Application filed April 24, 1941, Serial No. 390,182

The problem of springing the frame of motorcycles by means of turnsprings has thus far not brought about any satisfying solution, in spite of the fact that turnsprings, as compared with the mostly used screwsprings, enjoy essential advantages. With turnsprings a special suppression of oscillation will be necessary. Furthermore, the springs arranged in couples are subjected to an unequal fatigue, which will cause one-side settlements. The employment of turnrodsprings, known by the construction of motorcars, forbids itself with single-line vehicles in consequence of the small breadth, which will enable not even to insert approximately sufficiently long springs. It was, therefore, endeavoured to use as turnsprings correspondingly strong cylindrical pieces of caoutchouc, which again, however, can apparently not possess any sufficient vitality.

It is now the purpose of this invention, to improve the motorcyclespringing process thus that, to obtain that effect, those turnsprings will preferably be made use of, which possess a suppressed oscillation and are fitted on springlevers, rulers or ruling parallelograms influencing the wheel to be springed. In a particular execution the invention makes use of such in themselves known laminary turnsprings, there the laminas, fitted around the turnaxles of the springs, may be swung with their endpoints around axles radially or approximately radially fitted to the turnaxle, so that the laminas will—i. e. each lamina in itself—be equally strongly be strained essentially only on turning. Such laminary turnsprings, in consequence of the multitude of laminas, possess an increased security against breaking and, in consequence of the friction between the single laminas, a very good suppression thus, that additional suppressing devices will not become necessary.

In the sketch, the invention is being described by means of samples of execution.

Fig. 1 shows the profile view and Fig. 2 the front view of a four wheel swinging. The Figs. 3 and 4 show two different executions of the hindwheel swinging in a profile view. Fig. 5 shows an intersection view on the arrow direction, as shown in Fig. 4.

With the handlebar axle 2, borne in the handlebar bearing (Figs. 1 and 2), are connected the eyepieces 3 and 4 bearing the swing levers 5 and 6 which, together with the forewheel fork 7 form a ruler parallelogram. The swing lever 6 encroaches on the turnswing axle 8. The turnswing could as well be provided for in another one of the four jointpoints, on turnsprings also

in several jointpoints. The turnspring, in section partly described in Fig. 2, consists of the central axle 9, on the ends of which encroach the swing levers 6. The axle 9 is borne in the forepieces 7. Firmly wedged upon the axles is the circular piece 10, possessing on itself oblong slits 11, into which encroach from a ring 12 the turnpins 13 for the ends of the spring laminas 14. The other lamina ends are rotatorily fitted around turnpins (not described), which sit in the circular piece 15, which is in an appropriate manner firmly connected with the tubelike casing. The casing 16 is rotatorily borne on the forecheeks 7, 7. On the shell, there is adjusted a ring 18, formed in the manner of a crownnut, by means of which the ring 17 and the shell 16, through insetting a thorn used as a lever, may be twisted against the turning effect of the spring laminas. A springbolt 19 serves in order to fix the relayed spring. With the change of the relay of the spring this will be adapted to the loading of the foreaxle, respectively slackenings of the spring may be compensated.

To perform a springing of the hindaxle, by way of example, as is shown in Fig. 3, the hindwheel-axle, supported by a linkparallelogram 20, 21, 22, 23, into the one link of which is fitted the turnspring 7. There may naturally also in other linkpoints, for instance between the links 20 and 21, turnsprings be provided for. The rulers 23, in the present example, are fitted upon the shell 16 (Fig. 2), and may be swung with this, whereas the axle 9 may be turned by means of the lever 27 in the cheeks 26, connected with wheelblock 25, and be fixed by means of bolttacks 28 or such like devices, whereby the relay of the turnspring may be changed and adapted to the, for the time being, loading of the hindwheel. The turnspring 7, as is shown in Figs. 4 and 5, may also be fitted in the hindwheelaxle, so that the springlever may be adjusted in whatever shortness as may be liked, while it supports itself on the outriggers 31, 32 of the frame with its free end 24.

To such purpose the outriggers 31, 32 are supported one against the other by means of a connection piece, consisting in two pieces 35 and 36. The two pieces 35 and 36 are flexibly connected with one another on the spot of the swinglever-link 34 through a bolt, which is common for these pieces and the linklevereye, and receives its stiffness by sliding on the shoes of these linkpieces upon the outriggers 31 and 32. The flexible connection of the pieces facilitates the sliding on. The hindwheel runs in ball-bearings upon the shell 7 of the turnspring. On the shell, there sit

the turnlevers 30. The axle of the turnspring is secured against turning by help of the levers 37, which are slideably conducted in conducting liners 38, which are flexibly borne on the curvepiece 36.

In order to take off the hindwheel, for instance, when there has happened some damage to the tire, the nuts 39, holding fast the curvepiece 36 upon the outrigger 32, will be screwed off and the linkbolt 34 drawn out so far, that the piece 36 and the springlever 30 will become free of the shoe 35, but still remain in contact with one another, so that the levers 30 and 37 are kept in their position towards the turnspring-relay by aid of the curvepiece 36. The curvepiece 36 may be swung around the link 34, so that within certain

limits, the position of the curvepiece end on the outrigger 32 under its elastic compliance and thus the relay of the turnspring may be changed by altering the nuts 39 and 40. Also the shoe 38 on the curvepiece 36 may be fitted flexibly. Instead of bearing the lever 37 slideable, in case that the turnspring was placed to the hindaxle, the levers 30, 37 may also, similar to, as it is shown in Fig. 3, but with a considerably shorter length of lever, form with the respective rulers a rulerparallelogram.

In an obviously equal way the bearing, according to the invention, may naturally also be adopted with ordinary bicycles.

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