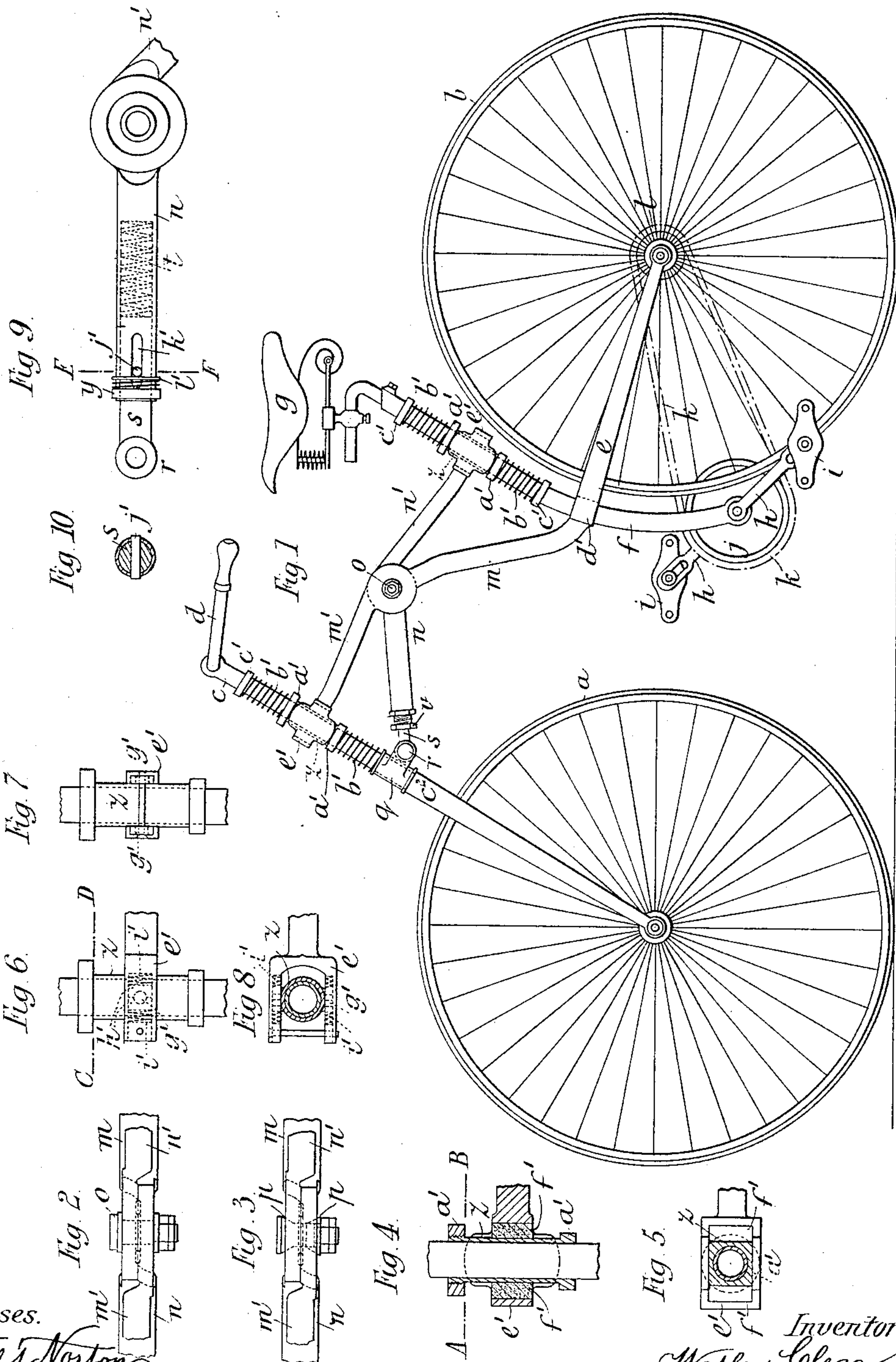


W. CLEGG.  
VELOCIPED.

No. 389,200.

Patented Sept. 11, 1888.



Witnesses.

*Wm. T. Norton,*  
*E. A. Bond.*

Inventor.

*Wesley Clegg.*

by *John J. Husted* for  
his Attys.

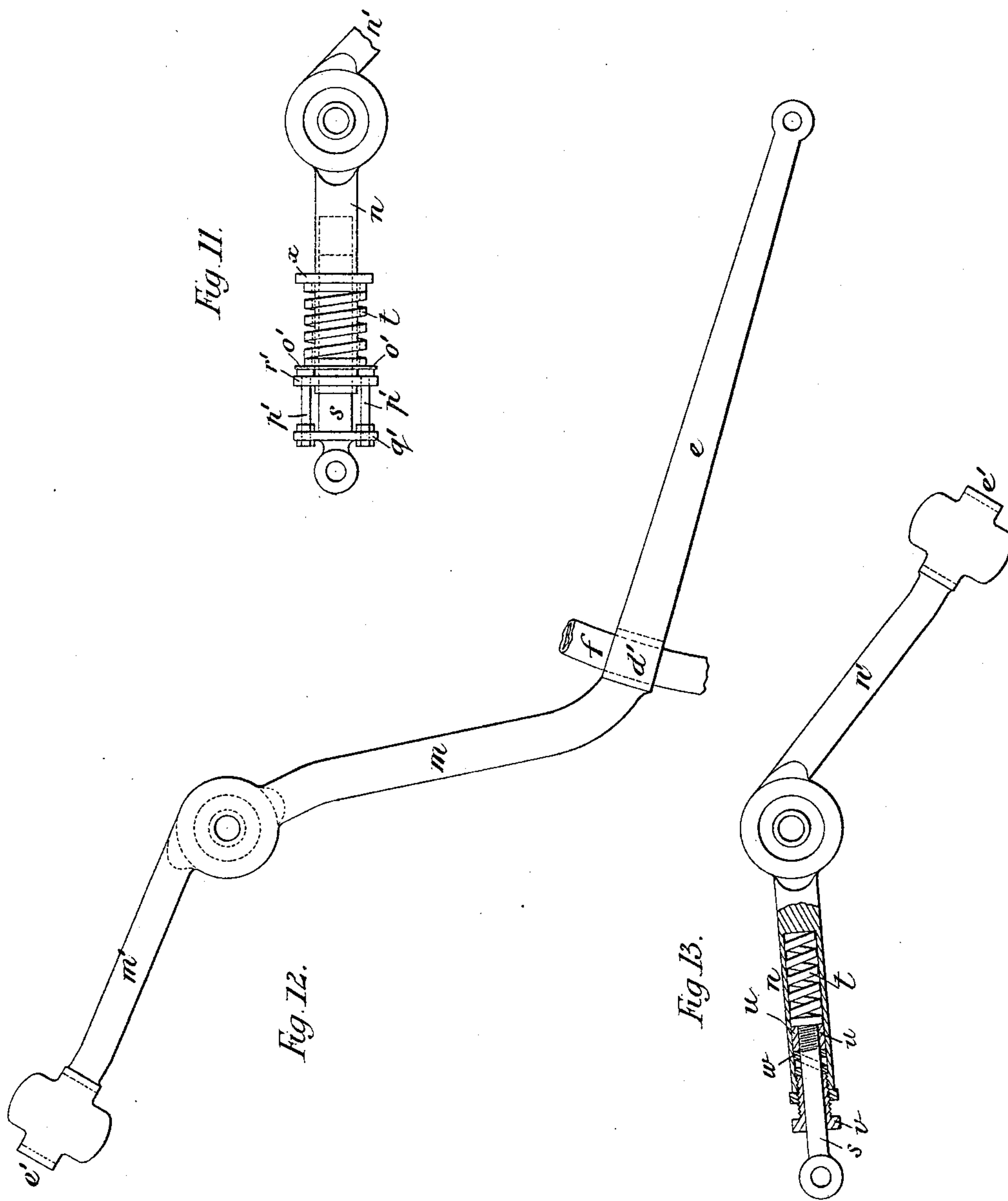
(No Model.)

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# UNITED STATES PATENT OFFICE.

WESLEY CLEGG, OF BRADFORD, ENGLAND.

## VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 389,200, dated September 11, 1888.

Application filed April 23, 1888. Serial No. 271,573. (No model.)

*To all whom it may concern:*

Be it known that I, WESLEY CLEGG, a subject of the Queen of Great Britain, residing at Bradford, England, have invented new and useful Improvements in Velocipedes, of which the following is a specification.

The object of this invention is to provide means for taking up or reducing as much as possible the vibration and strains which usually come upon the wheels and frame-work of velocipedes, thereby increasing the durability of the machines and the comfort of their riders.

In carrying out this invention the frame or backbone of the machine is in two parts, which cross one another and move or rock upon a central pin so as to allow either wheel to move in a vertical plane. Upon the front or steering fork or post I provide a sleeve placed upon or immediately above the shoulder of the said post, in which sleeve the post can turn freely. From this sleeve one portion of the frame (forming an auxiliary arm) is carried to the saddle-post or upright part of the back fork to which it is connected, so as to allow of free vertical motion in either direction, the said motion being limited in extent by spiral springs. The other or main portion of the backbone is rigidly connected to the saddle-post, and crossing the auxiliary arm is continued to the front or steering post, upon which the end is free to move in a vertical direction, the movement being limited by springs.

Lateral motion of the movable parts of the frame is provided against by the aforesaid attachments to the front and back posts.

The two parts of the frame where they cross each other are connected by a pin about which they are free to move. This pin I place at a convenient point between the steering and saddle posts, and I have found that a point about midway between the posts answers well.

In order to enable my invention to be fully understood, I will proceed to describe how it can be carried into practice by reference to the accompanying drawings, which illustrate my invention, by way of example, applied to what is known as a "safety rear-driven bicycle."

Figure 1 is a side elevation of such a bicycle with my improvements. Fig. 2 is a plan showing the central pin connection or joint for the two parts of the frame consisting of the backbone and the auxiliary arm. Fig. 3

shows a modified construction of the joint. Fig. 4 is a vertical section showing the manner in which the free ends of the backbone and auxiliary arm are connected to the steering-post and saddle posts, respectively. Fig. 5 is a horizontal section on the line A B of Fig. 4. Figs. 6 and 7 are respectively a side elevation and a front elevation of a modified form of the connections shown in Figs. 1, 4, and 5. Fig. 8 is a horizontal section on the line C D of Fig. 6. Fig. 9 is an elevation of a modified form of telescopic joint, hereinafter described. Fig. 10 is a transverse section on the line E F of Fig. 9. Fig. 11 is an elevation of another form of telescopic joint; and Figs. 12 and 13 are detached views of the main frame or backbone and auxiliary arm, respectively. Figs. 2 to 13 are drawn to a larger scale than Fig. 1.

Similar letters in all the figures indicate similar or corresponding parts.

*a* is the front or steering wheel of the bicycle.

*b* is the hind or driving wheel.

*c* is the steering-post on the front fork, *c'*.

*d* is the steering-handle.

*e* is the fork of the hind wheel.

*f* is the saddle post or support carrying the saddle *g* at its upper end, and the driving-cranks *h h*, treadles *i i*, and chain-wheel *j* at its lower end.

*k* is the chain and *l* the chain-wheel on the hind wheel, all the said parts being of ordinary construction.

*m m'* and *n n'* are the two parts of the frame, which I construct and arrange, as shown in Fig. 1, so that they cross each other, the part *m m'* forming the backbone or main frame, and the part *n n'* the auxiliary arm.

*o* is the pin on which the two parts of the frame move or rock, the said parts being at this point formed with disks the faces of which move directly against each other; or the faces may be fitted with balls to reduce friction.

The pin *o* may consist of a plain bolt and nut, as shown in Fig. 2; or I can fit the bolt with adjustable cones *p p*, as shown in Fig. 3.

*q* is the sleeve which I provide upon the front or steering post, *c*, and which is here shown resting upon a shoulder on the fork *c'*. The steering-post is free to revolve within the sleeve *q*, and other attachments placed upon



it, so that the rider has direct control over the steering-wheel *a* by means of the handles *d*. The front part, *n*, of the auxiliary arm, is jointed at *r* to the sleeve *q*, and is arranged to work telescopically by making the part which is jointed to the sleeve *q* in the form of a rod or plunger, *s*, adapted to slide in the front end *n*, of the auxiliary arm *n n'*. A spring, *t*, is placed within the part *n* and bears against the collar *u* upon the free end of the plunger *s*. A hollow nut, *v*, within which the plunger *s* slides, is adjustably screwed into the free end *n* of the auxiliary arm, by which means the length of the part *n* of the auxiliary arm can be altered. A spring, *w*, is placed upon the plunger *s*, between the collar *u* and the adjustable nut *v*, for the purpose of taking up the shock or jar which might be caused when the plunger moves outward. The auxiliary arm *n n'* is continued to the saddle-post *f*, where it is connected to a sleeve *z*, having collars or flanges *a' a'*, and adapted to slide or have free vertical motion in either direction on the saddle-post *f*.

*b' b'* are the springs for limiting the extent of motion of the sleeve *z*, the said springs bearing against the collars or flanges *a' a'* and against similar collars or flanges, *c' c'*, on the saddle-post *f*.

The main frame *m m'* forms a continuation of the back fork, *e*, and is rigidly connected at *d'* to the saddle-post, and after crossing the auxiliary arm *n n'* is continued to the front or steering post, *c*, to which it is connected by a sliding sleeve *z*, similar to that connecting the auxiliary arm to the saddle-post *f*, and is similarly limited in its vertical movement by springs *b' b'*. It will thus be seen that the main frame *m m'* and the back fork, *e*, form one rigid piece or bar extending from the center of the hind wheel, *b*, to the steering-post *c*.

The main frame *m m'* and the auxiliary arm *n n'* can advantageously be connected to the sleeves *z z* by providing the free ends *m'* and *n'* with forks or straps *e'*, as shown in Figs. 1, 4, and 5, rubber cushions or other suitable springs, *f'*, being placed between the straps *e'* and the sleeves *z*. The upper parts of the straps are rounded, as shown, so that as the sleeves *z* move up or down the rounded surfaces can roll upon the collars *a' a'* of the sleeves, or the connection of the main frame and auxiliary arm to the said sleeves can be effected by providing a lug or trunnion, *g'*, on each side of the sleeves *z*, as shown in Figs. 6, 7, and 8. The lugs *g' g'* are fitted with split journals *h' h'*, and both the lugs and the journals are placed within the fork or strap *e'*.

Springs *i' i'* are placed at the back of the journals *h' h'*, and serve to keep the faces of the journals in working-contact with the lugs *g' g'*.

By means of the central pin or joint, *o*, free action for both wheels in a vertical plane is obtained, thus transferring the strains or shocks thrown upon the wheels or frame-work to the springs *b' b'*, which govern the free or vibrat-

ing ends *m'* and *n'*, respectively, of the main frame and auxiliary arm. It will be obvious that other joints than those shown can be employed.

The telescopic arrangement of the auxiliary arm (which may be of any convenient section) serves to limit the movement of the front wheel in an outward direction, but allows it to move inward on meeting with an impediment, thereby allowing the wheels to approach each other, the strain or shock being taken up by my system of springs.

Figs. 9 and 10 illustrate a modified form of the said telescopic arrangement, in which I fix in the plunger *s* a pin, *j'*, working in slots *k'*, formed in the part *n* of the auxiliary arm, the outward movement of the plunger being limited by a spring sliding collar, *l'*, and a fixed collar, *y*, against which spring sliding collar the pin *j'* abuts, except when the plunger is moved inward through the wheels coming in contact with an impediment. By varying the position of the fixed collar *y* the length of the arm can be adjusted.

The spring sliding collar can, if required, be dispensed with, the pin then bearing against the rigid collar *y*.

Fig. 11 illustrates another form of the said telescopic arrangement, in which the spring *t* is placed outside the part *n* of the auxiliary arm and bears against a fixed collar, *x*, and a loose ring, *o'*, thereon. The ring *o'* bears against adjustable bolts *p' p'*, fixed to a collar, *q'*, on the plunger *s*. The bolts slide in and are guided by a collar, *r'*, fixed on the end *n* of the auxiliary arm, and serve to adjust the length of the part *n* and to regulate its telescopic movement.

I have described and shown, by way of example, three telescopic arrangements which I have found to give good results; but it will be obvious that other arrangements could be employed which would give a telescopic movement to a part of the frame. It will be obvious that the said spring telescopic arrangement and joints can be applied to the part *m'* or to the part *n'* of the frame, or to both those parts instead of or in combination with the telescoped portion *n*, so as to allow the said parts to move through the arc of a circle struck from the pin or joint *o*.

I sometimes find it advantageous to place a small spring between the sleeve *q* and the shoulder of the fork *c'*, the sleeve *q* in this case sliding to a small extent on the steering-fork. The object of this spring is to form a cushion between the sleeve *q* and the fork *c'* when the latter meets with any impediment.

I have described and illustrated my invention as applied to a rear-driven safety-bicycle; but I wish it to be understood that I desire to claim its application to any kind of velocipede the construction of which will admit of its being adapted thereto or used in combination therewith.

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. A frame of a velocipede made in two  
parts—that is to say, of a main frame or con-  
5 tinuous backbone and an auxiliary arm—the  
two parts crossing and moving upon each  
other, the front end of the continuous back-  
bone being connected to the steering-post and  
the ends of the auxiliary arm to the steering  
10 and back post of the velocipede by spring-con-  
nections, so as to allow either wheel to move  
in a vertical plane and approach or recede  
from each other, substantially as and for the  
purpose hereinbefore described.

15 2. The described means whereby the upper  
or vibrating ends of the main frame and aux-  
iliary arm are connected to their respective  
posts, consisting of the combination of the  
sliding sleeves *z z*, the springs *b'*, and the  
20 forks or straps *e'*.

3. The described means for connecting the  
front end of the auxiliary arm to the steering-  
post of a velocipede, consisting of the combi-  
nation, with such arm and post, of a sleeve, *q*,  
plunger *s*, jointed thereto, telescopically con- 25  
nected with the auxiliary arm and provided  
with a spring, *t*, check-spring *w*, and regulat-  
ing-nut *v*, all substantially as shown and de-  
scribed.

4. In combination with the posts *e* and *f*, 30  
the main part *m m'* of the frame and the aux-  
iliary part *n n'*, these parts crossing each other  
and having a rocking connection at *o*, the  
sleeves *z z* and *q*, telescopic connection *r s v t*  
*w*, and springs *b'*, all substantially as and for 35  
the purposes described.

WESLEY CLEGG.

Witnesses:

RD. B. NICHOLLS,  
J. F. LAST.