PATENT SPECIFICATION 693,646

Date of filing Complete Specification : Dec. 5, 1951.

Application Date : Jan. 25, 1951. No. 1906/51.

Complete Specification Published : July 1, 1953.

Index at Acceptance :—**Class 136(iii)**, B1i(1b : 6).

COMPLETE SPECIFICATION.

Motor Cycle Front Wheel Forks.

I, ERNEST RICHARD GEORGE EARLES, a British Subject, trading as THE ELMS METALS, of Rednal Road, West Heath, in the City of Birmingham, 31, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention relates to motor cycle front wheel forks of the kind having telescopic shock absorbers incorporated therewith.

A conventional form of fork of the said kind possesses the disadvantage that with a large inward movement of the slidable shock absorber members, there results an appreciable shortening of the wheel base of the cycle, that is to say, a shortening of the distance between the points of contact of the front and rear wheels with the ground, and this may result in interference with the driver's control of the steering when travelling at high speed.

The object of the present invention is to provide a fork construction which obviates or minimises the said disadvantage.

The invention comprises the combination of a main fork member the upper portion of which is adapted to be connected to the steering head of the cycle frame, a sub-fork member, and a pair of telescopic shock absorbers arranged parallel with each other and pivotally connected at their ends to the main and sub-fork members, the lower portion of the main fork member being curved or inclined rearwardly so that its lower end can lie behind the front road wheel of the cycle, and the sub-fork member being pivotally attached at one end to the lower end of the main fork member, and adapted at or near its other end to carry the front road wheel of the cycle, so that with articulation of the sub-fork member the length of the road wheel base of the cycle remains substantially constant.

In the accompanying drawings :

Figures 1 and 2 are respectively a side and a front elevation illustrating an embodiment of the invention.

Referring to the drawings, the main fork member comprises a pair of tubes *a* arranged parallel with each other, these being interconnected at their upper ends by a pair of transverse parts *b*, *c* adapted to be attached to, and to receive between them, the steering head *d* of the cycle frame.

The lower parts of the tubes *a* are curved or inclined rearwardly so that their lower ends can lie behind the front road wheel *e*. To these ends is pivotally attached one end of a sub-fork member in the form of a bifurcated arm *f* which extends forwardly at opposite sides of the wheel. At or near its outer end this arm is adapted for the attachment thereto of the wheel spindle, and the arm is so disposed that with articulation of the arm relatively to the main fork member, the distance between the points of contact of the front and rear wheels with the ground does not materially alter.

The shock absorbers are of the hydraulic spring-loaded type, and each comprises a cylinder *g* which at its upper end is pivoted to a lug *h* on the main fork member at a position near the lower transverse part *b* above mentioned, and a piston rod or plunger *i* which at its outer end is pivoted to a lug on the bifurcated arm at a position adjacent to the wheel spindle, the two shock absorbers being arranged parallel with each other at opposite sides of the wheel.

When the cycle is in motion irregularities in the road surface cause the sub-fork member, or bifurcated arm, to articulate relatively to the main fork member, under the control of the shock absorbers, and the movement is such as involves a minimum of variation of the wheel base.

The main and sub-fork members may be made from tubes of any suitable metal, but

preferably they are made from aluminium or other light alloys.

What I claim is :—

1. A motor cycle front wheel fork of the kind specified, comprising the combination of a main fork member the upper portion of which is adapted to be connected to the steering head of the cycle frame, a sub-fork member, and a pair of telescopic shock absorbers arranged parallel with each other and pivotally connected at their ends to the main and sub-fork members, the lower portion of the main fork member being curved or inclined rearwardly so that its lower end can lie behind the front road wheel of the cycle, and the sub-fork member being pivotally attached at one end to the lower end of the main fork member, and adapted at or near its other end to carry the front road wheel of the cycle, so that with articulation of the sub-fork member the length of the road wheel base of the cycle remains substantially constant.

2. A motor cycle front wheel fork of the kind specified, comprising the combination and arrangement of parts substantially as described and as illustrated by the accompanying drawings.

MARKS & CLERK.

PROVISIONAL SPECIFICATION.

Motor Cycle Front Wheel Forks.

I, ERNEST RICHARD GEORGE EARLES, a British Subject, trading as THE ELMS METALS, of Rednal Road, West Heath, in the City of Birmingham, 31, do hereby declare this invention to be described in the following statement :—

This invention relates to motor cycle front wheel forks of the kind having telescopic shock absorbers incorporated therewith.

A conventional form of fork of the said kind possesses the disadvantage that with a large inward movement of the slidable shock absorber members, there results an appreciable shortening of the wheel base of the cycle, that is to say, a shortening of the distance between the points of contact of the front and rear wheels with the ground, and this may result in interference with the driver's control of the steering when travelling at high speed.

The object of the present invention is to provide a fork construction which obviates or minimises the said disadvantage.

The invention comprises the combination of a main fork member adapted to be connected to the steering head of the cycle frame, a sub-fork member pivotally attached at one end to the lower end of the main fork member, and a pair of telescopic shock absorbers arranged parallel with each other and pivotally connected at their ends to the main and sub-fork members, the sub-fork members being adapted to carry the front wheel, and being so disposed that with the articulation of the said members the length of the wheel base remains substantially constant.

In one embodiment of the invention, the main fork member comprises a pair of tubes arranged parallel with each other, these being interconnected at their upper ends by a pair of transverse parts adapted to be attached to, and to receive between them, the steering head of the cycle frame.

The lower parts of the said tubes are curved or inclined rearwardly so that their lower ends can lie behind the front wheel. To these ends is pivotally attached one end of a sub-fork member in the form of a bifurcated arm which extends forwardly at opposite sides of the wheel. At or near its outer end this arm is adapted for the attachment thereto of the wheel spindle, and the arm is so disposed that with articulation of the arm relatively to the main fork member, the distance between the points of contact of the front and rear wheels with the ground does not materially alter.

The shock absorbers are of the hydraulic spring-loaded type, and each comprises a cylinder which at its upper end is pivoted to a lug on the main fork member at a position near the lower transverse part above mentioned, and a piston rod or plunger which at its outer end is pivoted to a lug on the bifurcated arm at a position adjacent to the wheel spindle, the two shock absorbers being arranged parallel with each other at opposite sides of the wheel.

When the cycle is in motion irregularities in the road surface cause the sub-fork member, or bifurcated arm, to articulate relatively to the main fork member, under the control of the shock absorbers, and the movement is such as involves a minimum of variation of the wheel base.

In an alternative construction, the lower part of the main fork member is inclined or curved outwardly towards the front of the front wheel, and the sub-fork member consists of a bifurcated arm which extends around the front of the front wheel. This arm may be conveniently made by bending a length of tube to the desired form. At a position in

advance of the wheel spindle the arm is pivotally attached to the lower end of the main fork member, and at a position behind the wheel spindle it is pivotally attached to the lower ends of the piston rods or plungers of the shock absorbers, the latter being situated behind the main fork member, with the upper ends of their cylinder pivotally attached to the said main fork member.

The main and sub-fork members may be made from tubes of any suitable metal, but preferably they are made from aluminium or other light alloys.

MARKS & CLERK.

Abingdon: Printed for Her Majesty's Stationery Office, by Burgess & Son (Abingdon), Ltd.—1953.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2,
from which copies may be obtained.

693,646 COMPLETE SPECIFICATION
1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

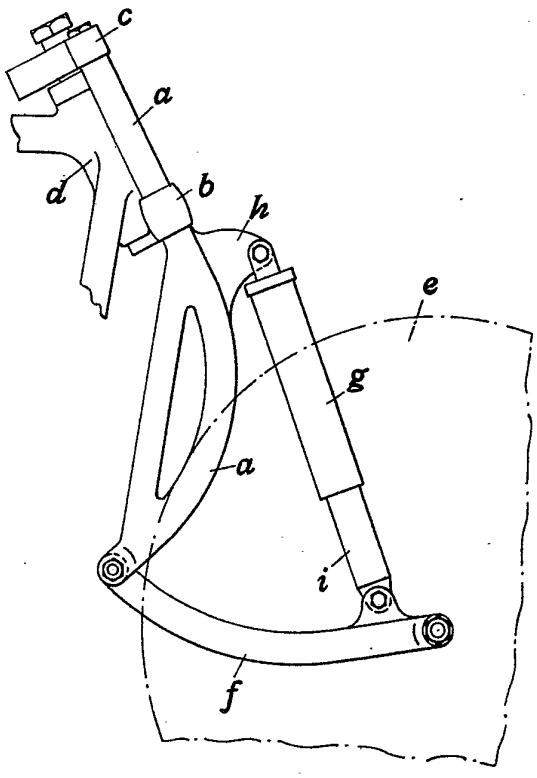

Fig.1

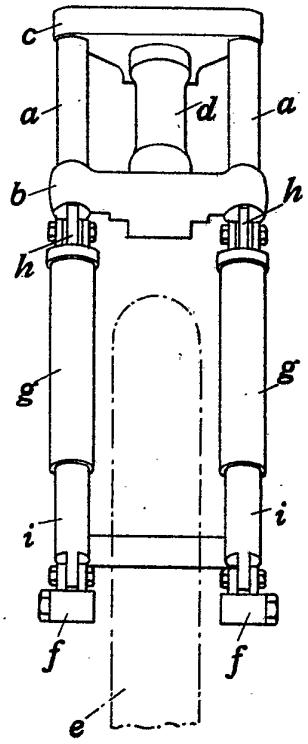

Fig.2