

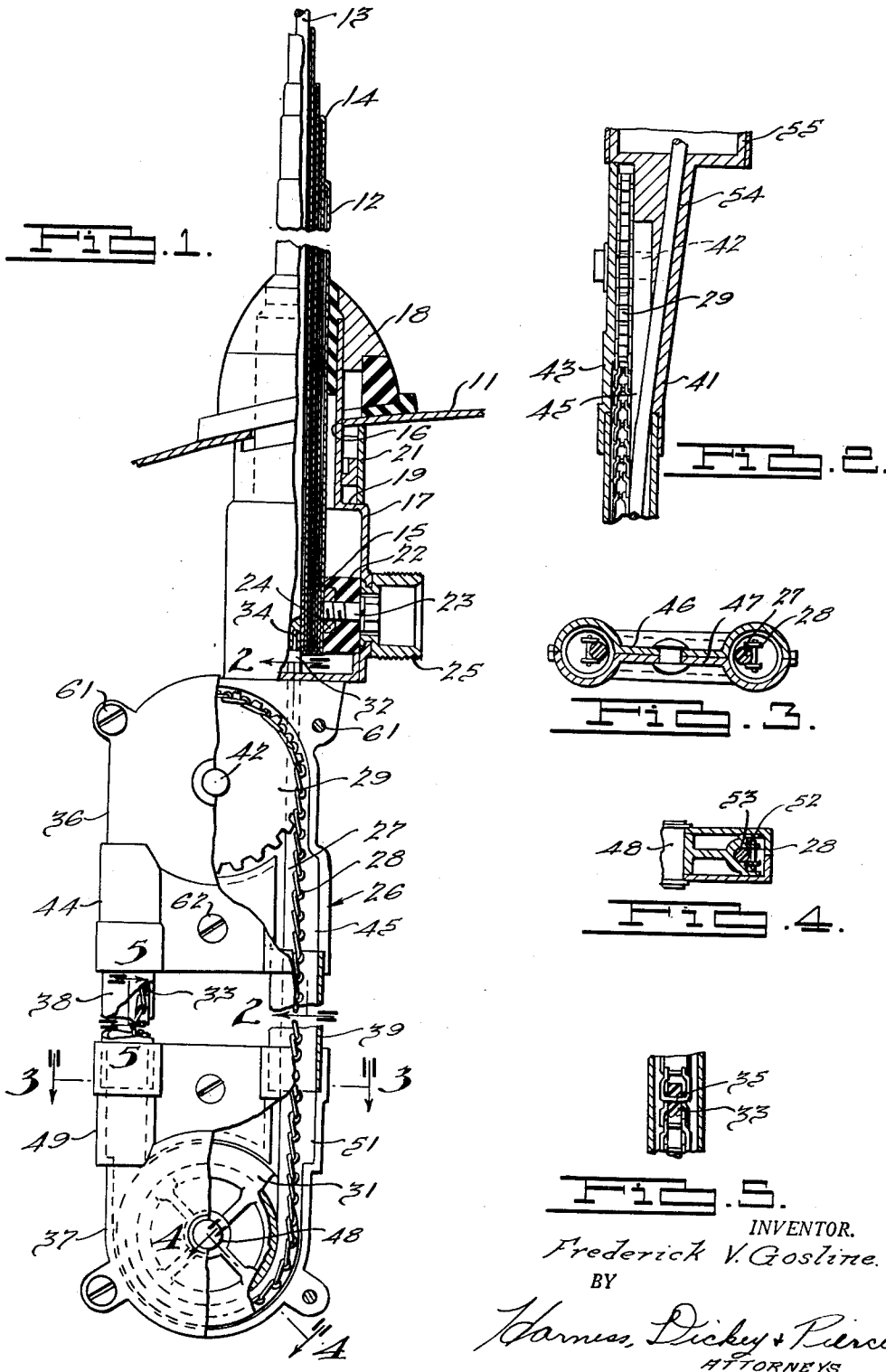
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ACTUATING MEANS FOR ANTENNAS AND THE LIKE

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ACTUATING MEANS FOR ANTENNAS AND
THE LIKE

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3 Claims. (Cl. 74—95)

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This invention relates to extensible and re-tractable radio antennas and particularly to extensible antennas and actuating mechanism therefore especially adapted to vehicular instal-
lations and in other places where actuation of
the antenna by manual or power means from a
remote point is desirable.

It is an object of the present invention to pro-
vide extensible antenna actuating means which
is an improvement over the disclosure of Patent
No. 2,346,782 and co-pending application Serial
No. 72,843, filed January 26, 1949, now Patent
No. 2,580,889.

It is another object to provide such actuating
means which comprises a flexible dielectric rod-
like element adapted to be driven by either man-
ual or power means, and in which the actuating
movement is positive in nature during both the
extending and retracting operations without the
necessity of forming screw threads or other ir-
regularities of surface configuration upon the
dielectric rod, or otherwise subjecting it to wear-
ing or abrasive action.

It is a further object to provide an actuating
means as described in which the driving means
for the dielectric rod is at least partially in adja-
cent parallel relation therewith, and which there-
fore is capable of being installed in a relatively
small space beneath a fender, cowl, or other body
panel of an automotive vehicle or the like.

Other objects and features of novelty of the
invention will be specifically pointed out or will
become apparent when referring, for a better
understanding of the invention, to the following
description taken in conjunction with the accom-
panying drawings, wherein:

Figure 1 is a side view partially in cross-section
of the improved antenna actuating means show-
ing a portion of the radio antenna;

Fig. 2 is a fragmentary view taken along the
line 2—2 of Fig. 1 and showing the guide pas-
sage for the dielectric actuating rod;

Fig. 3 is a cross-sectional view taken along
the line 3—3 of Fig. 1 and showing the shape
of the housing for the mechanism;

Fig. 4 is a fragmentary cross-section taken
along the line 4—4 of Fig. 1 showing the cross-
sectional shape of the retaining pulley; and

Fig. 5 is a fragmentary cross-sectional view
taken along the line 5—5 of Fig. 1 and showing
the manner in which the dielectric rod is secured
to the driving chain.

The antenna proper shown in the illustrated
embodiment may be one of the conventional
multisection telescopic types in common use.

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The antenna is adapted to be mounted on the
panel 11 which may comprise a fender, cowl, or
other body panel of an automotive vehicle, and
comprises a plurality of tubular sections 12 in
telescopic relation and inner cylindrical section
13 to which the actuating means is attached.
The antenna sections may have a series of upper
flanges 14 and lower shoulders 15 for limiting
the extended and retracted positions of the ele-
ments. The sections are held within an opening
16 in the body panel by means of cylindrical shell
17 which is rigidly mounted to the panel by
means of a dome nut 18 which holds shoulder
19 of the shell upwardly against a tubular spacer
21 below the panel 11. An insulating block 22
is mounted within the cylindrical shell 17 and
serves to secure the lower end of the antenna
within the shell. For this purpose, a locking bolt
23 is threadably mounted in a metallic insert 24
within the insulating block and engages the lower
end of outer tubular section 12. A threaded nip-
ple 25 concentric with bolt 23 may be provided
in order to receive the lead-in cable coupling nut
(not shown), bolt 23 serving as the lead-in ter-
minal.

The novel actuating mechanism of the inven-
tion is enclosed within a housing generally desig-
nated at 26 which is mounted directly below the
antenna and may be secured by means (not
shown) to the adjacent body panel. The ele-
ments which comprise the actuating mechanism
are essentially a rod-like element 27 formed of a
flexible dielectric plastic material such as nylon,
an endless looped flexible member such as a chain
28 which functions to drive the rod 27, a driving
sprocket 29 engageable with the chain 28, and
a retaining pulley 31 spaced from the driving
sprocket which holds the chain in taut condi-
tion. The rod 27 is secured at one end 32 to
the lower terminal of cylindrical antenna section
13, and at its other end 33 to a link of chain 28.
The attaching means to the section 13 may be
by a pin 34 inserted within an aperture (not
designated) in the lower end of the section, and
the attaching means to chain 28 may comprise
a transverse aperture in the flexible rod through
which extends cross bar 35 of one link in the
chain.

The housing 26 comprises an upper portion 36
for housing the driving sprocket 29, a lower por-
tion 37 for supporting the retaining pulley 31 and
two tubular portions 38 and 39 connecting por-
tions 36 and 37 thus forming a closed loop within
which the chain travels. Upper housing 36 com-
prises two complementary sections 41, 43 divided

substantially in the plane of the driving sprocket and chain and shown as held together by screws as 61, 62, one or more of which may serve also to attach the housing to the supporting body structure. Sprocket wheel 29 is fast on a shaft 42 to be connected to either manual or power driving means (not shown) for rotating the driving sprocket. The casing sections 41 and 43 may together form two downwardly extending passages 44 and 45 to which tubular sections 38 and 39 are respectively connected at their upper ends. Lower housing 37 comprises two complementary sections 46 and 47 supporting a pin 48 on which is mounted the retaining pulley 31. These two sections also form two upwardly extending passages 49 and 51 to which are connected the lower terminals of tubular sections 38 and 39. The run of the chain housed in tube 39 and aligned passages 45, 51 is parallel to central antenna section 13 and substantially aligned therewith when viewed in one plane, as in Fig. 1, but slightly offset therefrom when viewed in a perpendicular plane as in Fig. 2.

When the antenna sections are in their retracted position, as shown in Fig. 1, the rod-like element 27 and the chain 28 are in adjacent and substantially parallel relation, with the greater part of the retracted length of the rod 27 lying inside the loop defined by the chain. When in this position, the end 33 of the rod may lie within tubular section 38 of the housing and the rod and chain extend downwardly through passage 49 and are retained in operative position by means of retaining pulley 31. For this purpose, the periphery of the retaining pulley is provided with a rectangular recess 52 within which the chain 28 is disposed, and the floor of this recess in turn has a recess 53 of substantially semicircular cross-section which retains the rod 27. It will thus be seen that the rod will be securely held in underlying relation with chain 28 at least until the rod and chain leave the retaining pulley 31.

Section 41 of upper housing 35 is provided with an angularly disposed guide passage 54 which leads from passage 45 to the flanged upper end 55 of the section 41 mounted within the lower end of shell 17, passage 54 terminating directly below the cylindrical section 13 of the antenna. It will thus be seen, especially from Fig. 2, that as the rod 27 and chain 28 leave pulley 31, the rod will be guided by passage 54 away from its underlying relation with the chain, and will extend in inclined relation to the housing.

During the operation of the device chain 28, which will be always held in a sufficiently taut condition by the relative dimensions of the parts, may be driven in either a clockwise or counterclockwise direction as shown in Fig. 1 by the manual or power means which is applied to shaft 42. Starting from a condition in which the antenna is fully retracted, the chain will be driven in a counterclockwise direction, thus forcing the portion of rod 27 which is in underlying engagement with the chain in the same direction. The rod, although flexible, is stiff enough to push the antenna sections up to their extended position against the friction which is normally encountered. As the rod is driven around retaining pulley 31 it will be fed through guide passage 54, thus applying its full force directly beneath the cylindrical section 13. The dimensions of the elements are such that when the antenna is in its

fully extended position the end 33 of the rod 27 will still extend far enough below guide passage 54 so that the chain and rod will not be pulled laterally with respect to one another with damaging force.

When it is desired to retract the antenna, the driving sprocket 29 will be rotated in a clockwise direction, thus drawing rod 27 downwardly through passage 54 and around retaining pulley 31. Since the end 33 of the rod is secured in underlying relation with chain 28, the proper reception of the chain and rod within recesses 52 and 53 respectively of the retaining pulley 31 will be assured.

While it will be apparent that the preferred embodiment of the invention herein disclosed is well calculated to fulfill the objects above stated it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. Means for longitudinally actuating an extensible radio antenna or the like comprising a flexible rod-like actuating element adapted to be connected to the antenna, a looped endless chain, one end of said rod-like element being secured to said chain and lying at least partly within the loop circumscribed thereby, a retaining pulley having separate retaining portions for holding said chain and said element in adjacent parallel relation with the rodlike element lying between the chain and the center of the pulley, and a driving sprocket in spaced relation with said pulley and operatively engageable with said chain.

2. Means for longitudinally actuating an extensible radio antenna or the like comprising a flexible rod adapted to be connected to the antenna, an endless flexible looped member, one end of said rod being secured to said member and lying at least partly within the loop circumscribed thereby, retaining means for holding said member and rod in adjacent parallel relation, means engageable with said endless member for imparting a longitudinal driving force thereto, a housing for said endless member, and a guide passage in said housing and spaced from said retaining means for guiding said rod to and from an inner portion of said endless member.

3. Means for longitudinally actuating an extensible radio antenna or the like comprising a flexible rod-like actuating element adapted to be connected to the antenna, and means for imparting longitudinal movement to said element, said means comprising an endless flexible looped member, one end of said rod-like element being secured to said member, and a retaining pulley for holding said looped member and element in adjacent parallel relation, said retaining pulley having a recess for receiving said endless member, and a second recess within said first recess for receiving said rod-like element, whereby the latter element will be held in underlying relation with respect to the endless member.

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