Nov. 21, 1950 R. ELLIS 2,530,654

FLAGPOLE

Filed Dec. 3, 1945 2 Sheets-Sheet 1

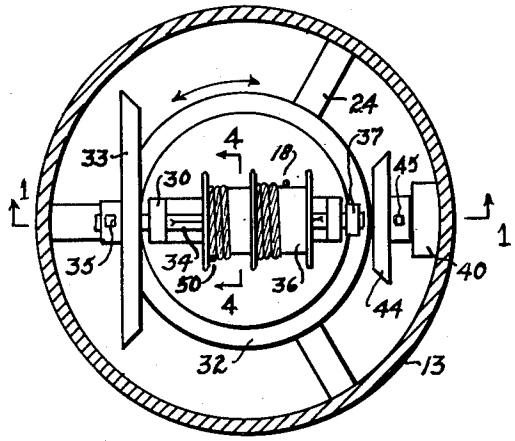


Fig. 2.

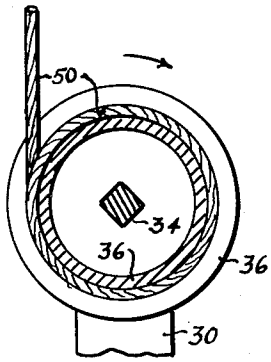


Fig. 4.

Fig. 1.

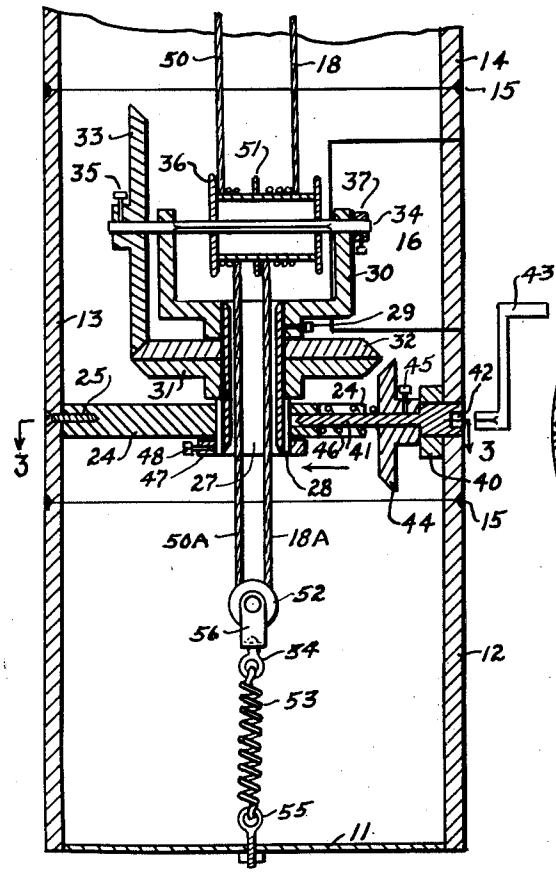
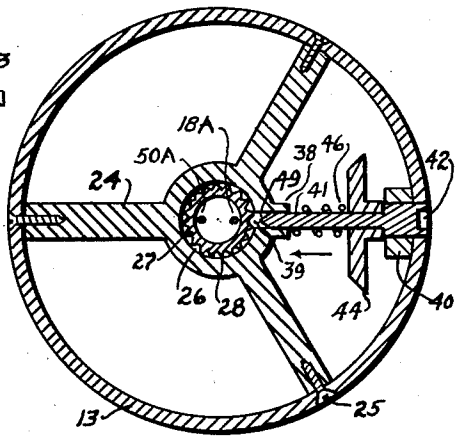


Fig. 3.



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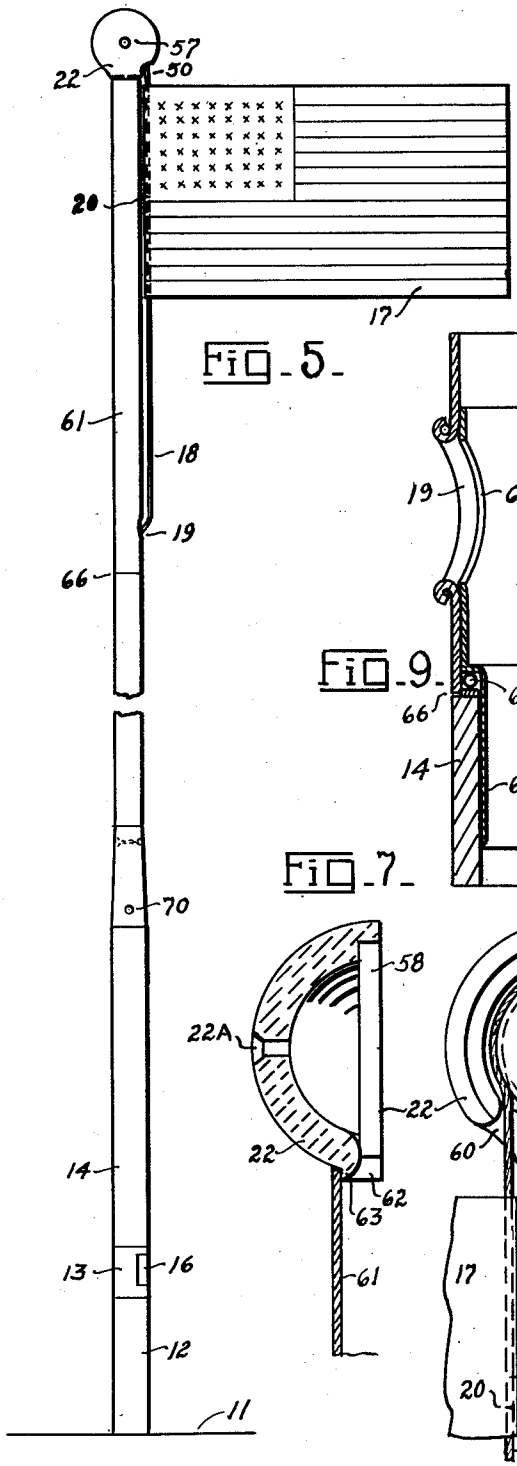


Fig. 5.

Fig. 9.

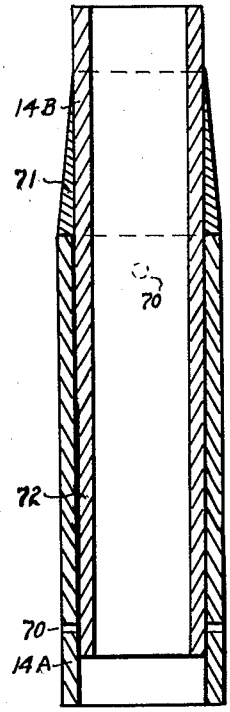


Fig. 10.

Fig. 7.

Fig. 8.

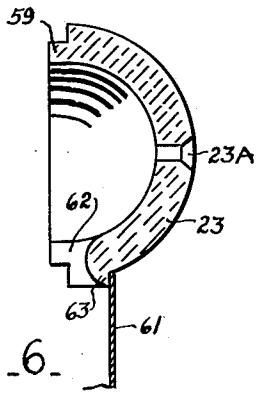


Fig. 6.

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FLAGPOLE

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5 Claims. (Cl. 116—173)

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This invention relates to flag-poles and the principle object of the invention is the provision of improvements in both construction and operation over the flag-pole illustrated in my Patent No. 2,377,219, issued May 29, 1945, and also over my pending patent Serial No. 530,950, on Flag-Pole and Operating Means Therefor, filed April 14, 1944, and issued as Patent No. 2,440,500 on April 27, 1948.

One of the principal improvements shown in this invention is improved flag operating means, a positive raising and lowering of the flag being accomplished by turning a crank in the proper direction, whereas, heretofore a weight was used to pull the flag in one direction.

A further object of the invention is the provision of a hollow golden colored glass ball on the top of the flag-pole, the ball being in halves so that a pulley may be enclosed therein shielded from the weather.

A still further object of the invention is the provision of means for enabling the thrust ball bearing, which permits the flag to fly in any direction with the wind, to be entirely invisible, the rotatable flag-pole extension continuing in a direct line of vision with the flag-pole.

And a still further object of the invention is the provision of a sectional flag-pole which can be assembled "on the job," the joints being generally invisible and being tapered off at such a small angle that the pole appears to taper from bottom to top in one continuous line.

Other and further objects will appear in the specifications and be specifically pointed out in the appended claims, reference being had to the accompanying drawings exemplifying the invention, and in which:

Fig. 1 is a vertical section on the line 1—1 of Fig. 2 and shows the improved flag operating mechanism.

Fig. 2 is a top view of the flag operating mechanism.

Fig. 3 is a cross sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a cross sectional view on the line 4—4 of Fig. 2 and shows the square shaft on which the reel is mounted.

Fig. 5 illustrates the flag-pole with flag in flying position.

Fig. 6 shows the inside view of one of the glass ball halves.

Fig. 7 is a sectional view on the line 7—7 of Fig. 6.

Fig. 8 is a sectional view of the opposite glass ball half.

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Fig. 9 is a vertical sectional view of the improved thrust ball bearing arrangement.

Fig. 10 illustrates the method of joining two sections of different diameter hollow pole sections together so as to simulate a continuously tapering pole.

Referring to the drawings in which like characters and numerals of reference refer to similar parts throughout the several views, the numeral 11 denotes the ground or other base on which the flag-pole 12 is set. At a convenient operating height on this pole is the flag operating section 13 which is attached intermediate the lower pole section 12 and the upper pole section 14, this attachment being in any suitable manner such as by welding at 15. A door 16, hinges not shown, is provided in the section 13 for inspection, etc. The flag 17 is operated by pulling the rope 18 (see Fig. 5), from the flag operating section 13, through hole 19 in the hollow flag-pole extension 61, the flag entering the hollow pole through said hole 19 when the flag is hauled down and vice versa when it is desired to fly the flag. The ends of the rope 18 terminate at the middle inner edge of the flag 17 at the line 20, the resulting loop passing over the pulley 21 within hollow half ball sections 22 and 23 and down through the hollow interior of the pole 14 to the flag operating section 13.

The flag operating mechanism comprises a three armed spired 24 secured transversely to the operating section 13 by screws 25 as illustrated, this spider being provided with a centrally disposed hole 26 through which the hollow yoke shaft 27 extends and is free to revolve therein. This hollow shaft 27 is provided at its lower part with concentrically arranged serrations or teeth 28 while the upper part of the hollow shaft 27 is attached by means of set screw 29 to yoke 30. Between the serrations 28 and yoke 30 are mounted the bevel friction wheels 31 and 32, these wheels being attached to each other (not shown), but being free to revolve about the hollow shaft 27. Another bevel friction wheel 33 frictionally contacts wheel 32 as illustrated in Figs. 1 and 2 and is normally free to rotate around the perimeter of wheel 32 with hollow shaft 27, the wheel 33 being attached to shaft 34 by means of set screw 35, the shaft 34 passing through both extended arms of yoke 30. The shaft 34 has a square cross section in the middle portion thereof as illustrated in Figs. 1 and 4, a reel 36 being free to slide along this shaft, the extent of this sliding movement being limited by the extending arms of yoke 30. A collar 37 is attached to one

end of shaft 34 as illustrated and another collar 47 is attached by means of set screw 48 to hollow shaft 27 as shown. Between two of the arms of spider 24 is a boss 38 through which extends a hole 39 communicating with vertical hole 26 in the spider. In line with hole 39 is attached to section 13, as by welding, a boss 40 which is also provided with a hole through which shaft 41 is free to both slide longitudinally and revolve. The shaft 41 is preferably slightly enlarged at the pole end as illustrated in Figs. 1 and 3 so as to provide a convenient socket 42 for the reception of crank 43 and also to act as a shoulder for friction wheel 44 which is secured to shaft 41 by means of set screw 45, this wheel 44 being normally forced radially outwards together with shaft 41 by means of spring 46 which encircles shaft 41 and is compressively confined between the friction wheel 44 and boss 38. The shaft 41 has a point 49 on its inner end which point is designed to enter the space between any two adjoining serrations or teeth 28 but is normally held out of contact therewith by the compressive force of spring 46.

The operation of this mechanism is now as follows; assuming that it is desired to lower the flag from its flying position shown in Fig. 5, the crank 43 is inserted into square socket 42, and pushed inward so as to overcome compressive force of spring 46, this causing friction wheel 44 to contact friction wheel 31, and simultaneously causing point 49 on end of shaft 41 to enter the space between those two serrations 28 in hollow yoke shaft 27 which happen to be in place, thus preventing this yoke shaft from rotating, the crank 43 being then turned to the right which will cause bevel friction wheel 33 to revolve through bevel friction wheels 31 and 32. With bevel friction wheel 33 of course revolves reel 36, causing rope leg 18 to wind up on reel while rope leg 50 will unwind therefrom. Each rope leg, 18 and 50, has preferably several turns around the reel as shown in order to provide sufficient friction against slippage and a central flange 51 separates the two ropes to prevent entangling, etc. It will be noted that the same number of rope turns always remain wound about the reel as, while rope leg 18 is winding on the reel, the portion 18A of this rope is unwinding an equal amount, this portion of the rope leading to pulley 52 which is tensioned downwards by means of spring 53, the swivel connection 54 enabling the pulley 52, hollow shaft 27, yoke 30, reel 36 and flag 17 to rotate unrestrictedly in either direction with varying directions of the wind under normal conditions, that is, when the crank 43 is withdrawn from use. The lower end of spring 53 is attached to screw eye 55 which is secured to floor 11 and the pulley 52 is mounted in clevis 56. As crank 43 is turned to the right as aforesaid, the rope leg 18 winds up on reel 36 and pulls flag 17 downwards into hole 19 and down into the hollow interior of the flag-pole 14 a sufficient distance to house it from view and weather. The crank 43 is then withdrawn from socket 42 whereupon the spring 46 forces the parts to normal disengaged position. To bring the flag again into flying position, the crank is again inserted into the socket 42 and turned to the left, this causing the flag to be hauled out of the hollow interior of pole 14 into position illustrated in Fig. 5. The rope leg 50A extends from pulley 52 to reel 36. Only a single length of rope is preferably used, stretching and any unequalized mechanical operation of the rope being automatically adjusted by the resiliency of spring 53, a weight being substituted for the spring if desired. It will be apparent, from this arrangement, that a positive pull on the flag 17 is provided in either direction while permitting the flag to rotate with the wind under normal conditions without limitations. The rope legs 18 and 50 are always kept taut so that the inner edge of the flag remains close to the flag-pole, thus improving the flying appearance. The reel 36 moves transversely along shaft 34 a limited distance according to the winding and unwinding of each respective rope leg 18A and 50A. The ends of the rope are preferably sewed to the inner edge of flag 17, the rope leg 50 traversing pulley 21 housed within golden colored glass ball halves 22 and 23. A bolt 57, which is designed to pass through holes 22A and 23A of the ball halves, secures these halves together being incidentally a shaft for pulley 21. An annular depression 58 is formed in half 22 while an annular projection 59 is formed in half 23, the projection 59 fitting into the depression 58 so that a flush outer surface is obtained. A semi-circular hole 60 is formed into each ball half which, when the halves are clamped together by bolt 57, form a single round hole through which one rope leg 50 extends from pulley 21, the other leg of rope extending into hollow extension flag-pole 61 through hole 62 which is also formed from two semi-circular holes in the two ball halves. A protruding shoulder 63 on each ball half extends into the top of flag-pole extension 61 a short distance as illustrated in order to secure the ball in place.

The flag-pole extension 61 is preferably constructed of thinner metal than flag-pole 14 and ends at the top edge of this pole, a small space 66 being left therebetween. A re-inforcing tube 64 is attached to the flag-pole extension 61 on the inside thereof as by welding or press fit, as illustrated in Fig. 9, this tube also having a hole 65 in register with hole 19 in the flag-pole extension. The tube 64 extends downward into the flag-pole 14 a short distance as shown in order to steady the flag-pole extension. The tube 64 however, is free to rotate with the flag-pole extension on a vertical axis within the hollow flag-pole 14, there being an inwardly projecting flange 67 between the lower edge of which and the washer 68 a number of balls 69 are housed. It will thus be apparent that the flag-pole extension 61 is rotatable within flag-pole 14 on a ball bearing mounting, the outer vertical faces of these poles being flush and yet permitting the flag 17 to be hauled therethrough. Gears would be substituted for the friction wheels on the larger sizes of flag-poles.

In Fig. 10 is illustrated the method of forming the lower portion of each pole section, comprising the main fixed pole, so that each section will snugly fit into each adjoining section and remain in place without the use of any fastening means between the two sections, incidentally having the appearance of a single uniformly tapering pole. This construction also has the advantage of permitting the entire flag-pole to be conveniently shipped in sectional form from the factory to the erecting place and simply "stuck" together without the use of tools or experienced mechanics. The character 14B denotes a lower pole section and 14A an adjoining upper pole section. To pipe section 14B is attached, a short distance above its lower end, a hollow cone frustrum 71 by means of welding (not illustrated), or by any other convenient means, this cone frustrum hav-

ing its base of the same outside diameter as the lower pipe section and its top of the same outside diameter as the upper pipe section, the degree of inclination from the vertical being approximately three degrees, it having been found by experiment that it is impossible for the eye to discern the joint from a uniformly tapering pole. It will thus be apparent that, when erecting the pole, all that is necessary is to insert the lower end of each successive smaller pole section into the top open end of the next larger pole section, the cone frustrum **71** forming a shoulder on which the upper pole section rests on the top edge of the lower pole section, while the downwardly projecting portion **72** of the upper pole section provides lateral stability and keeps the sections in close alinement. Should it ever be desired to dismantle the flag-pole, all that is necessary is to remove the sections by lifting each upper pole section successively off each lower pole section. Should it be desired to securely attach the upper and lower pole sections together, this can be easily done by welding through holes **70**. The pole sections are compressively urged together by means of spring **53** through the medium of ropes **18** and **50** operating over pulleys **52** and **21**.

From the foregoing description, it will be apparent that I have perfected a method of forcibly pulling the flag into or out of the hollow flag-pole while permitting free and unlimited rotation of the flag in respect to the fixed pole, a means for providing a serviceable and everlastingly bright appearing ball on the top of the flag-pole which incidentally houses a pulley, a means for permitting ball bearing action between the flag-pole extension and the fixed flag-pole without altering the appearance of the sleek tapering pole, and a means for assembling a flag-pole from pipe sections of progressively decreasing diameters in such manner that the flag-pole will have the appearance of a uniformly tapered pole.

Various changes may be made in the embodiment of the invention hereinabove specifically described without departing from or sacrificing the advantages of the invention as described in the appended claims.

I claim:

1. A flag-pole comprising a fixed hollow pole, a hollow flag-pole extension rotatably mounted to the upper end of said fixed hollow pole, a flag flying at the upper part of said hollow rotatable flag-pole extension, a pulley mounted to the top of said hollow rotatable flag-pole extension, a side hole in said rotatable flag-pole extension a short distance below the lower edge of said flying flag, a reel rotatable on a horizontal axis and bearing between two upstanding arms of a yoke, said yoke being mounted on a hollow vertical shaft within the lower part of said hollow fixed pole and normally free to rotate thereon, a lower pulley swivelly mounted beneath the said hollow vertical yoke shaft, means for tensioning said lower pulley downwards, a rope looped around said lower pulley and having both ends of said rope extending upwards therefrom through said hollow vertical yoke shaft and looped around said reel and then extending upwards through said hollow fixed pole, one end of said rope extending further through the said rotatable flag-pole extension and over the upper pulley thereon down to and attached to said flying flag, the other end of said rope emerging from the hollow interior of said fixed pole and said lower part of said hollow flag-pole extension through the aforesaid side hole therein

and attached to said flying flag, and means for hauling the said flying flag into the hollow interior of said hollow fixed pole through the aforesaid side hole by rotating said reel on its horizontal axis, said rotating means comprising a bevel friction wheel attached to the shaft of said reel, a horizontal bevel friction wheel free to rotate about said hollow vertical yoke shaft and frictionally contacting aforementioned bevel friction wheel, and another bevel friction wheel normally out of contact with said horizontal friction wheel and attached to another horizontal shaft, a square socket on the outer end of said last named horizontal shaft, said square socket being accessible from the outside of said hollow fixed pole, the other end of said horizontal shaft terminating in a point normally out of contact with said hollow yoke shaft, and a removable hand crank provided with a square projection for insertion into said square socket with means for rotating said friction wheel attached to the same shaft and causing said friction wheel to frictionally contact the aforesaid horizontal friction wheel and simultaneously prevent the aforementioned hollow vertical yoke shaft from rotating by contacting aforementioned pointed shaft end therewith.

2. A flag-pole as in claim 1, said aforementioned reel being free to slide horizontally a limited distance on its shaft.

3. A flag-pole comprising a fixed hollow pole, a hollow flag-pole extension rotatably mounted to the upper end of said fixed hollow pole, a flag flying at the top of said hollow rotatable flag-pole extension, an upper pulley mounted to the top of said hollow rotatable flag pole extension, a lower pulley attached to the base of and within said hollow pole, a side hole in said hollow rotatable flag-pole extension a short distance below the lower edge of said flying flag, a reel revolvable on a horizontal shaft which shaft bears in a yoke revolvable in a vertical axis within the fixed hollow pole, an endless rope traversing the two pulleys and reel, a loop of said rope extending outside of said flag-pole extension between the said side hole and the upper pulley, the flag being attached to said loop, a beveled friction wheel attached to the reel shaft and frictionally contacting another bevel friction wheel revolvable around the hollow vertical shaft attached to aforesaid yoke, and another bevel friction wheel attached to a fixed horizontal shaft and revolvable by means outside of said fixed hollow pole, said outside operating means permitting the simultaneous fixing of the hollow vertical shaft and the rotation of the bevel friction wheels, pulleys and reel.

4. A flag-pole as in claim 3, said reel having a plurality of rope turns therearound and having a rope loop extending downwards through aforementioned hollow vertical shaft to the lower pulley which lower pulley is mounted on a swivel and tensioned downwards.

5. A flag-pole comprising a fixed hollow pole, a hollow flag-pole extension rotatably mounted to the upper end of said fixed hollow pole, a flag flying at the top of said hollow rotatable flag-pole extension, an upper pulley mounted to the top of said hollow rotatable flag-pole extension, a lower pulley swivelly attached to the base of and within said hollow pole, a side hole in said hollow rotatable flag-pole extension a short distance below the lower edge of said flying flag, a reel rotatable on a horizontal shaft which shaft bears in a yoke rotatable in a vertical axis within the lower part of said fixed hollow pole, an endless rope travers-

ing the two pulleys and reel, a loop of said rope extending outside of said flag-pole extension between the said side hole and the upper pulley, the flag being attached to said loop, means within the lower part of said fixed hollow pole for permitting the reel to rotate in a horizontal plane, means for causing the reel to rotate in a vertical plane about its shaft, and means extending outside of said fixed hollow pole for causing said reel to rotate.

ROBERT ELLIS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
528,775	Hogue	Nov. 6, 1894
822,405	Teese	June 5, 1906
1,179,853	McCulloch	Apr. 18, 1916
1,610,663	Diago	Dec. 14, 1926
1,773,350	Drum	Aug. 19, 1930
2,072,573	Viglotti	Mar. 2, 1937
2,327,056	Nelson	Aug. 17, 1943
2,377,219	Ellis	May 29, 1945
2,440,500	Ellis	Apr. 27, 1948