

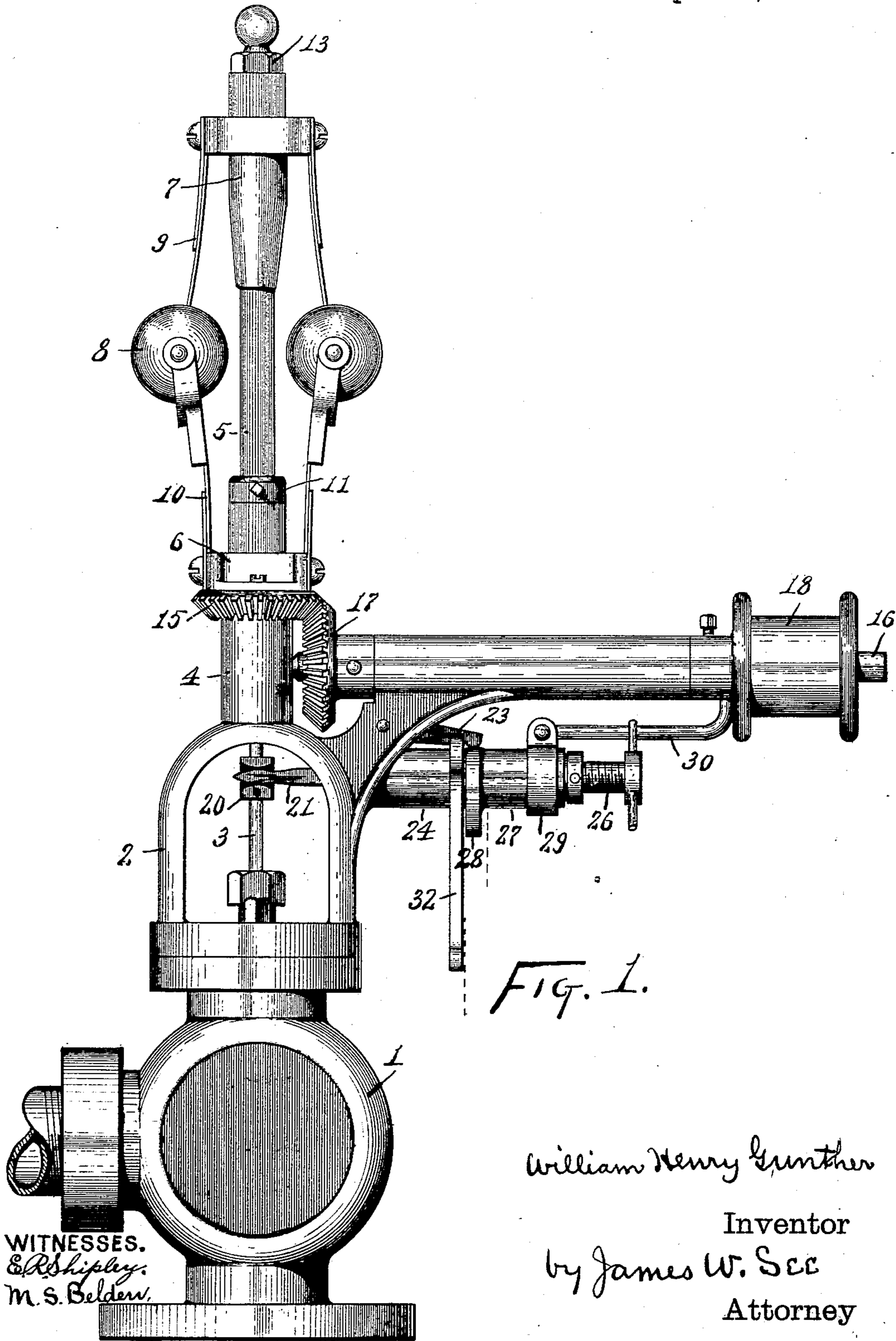
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3 Sheets—Sheet 1.

W. H. GUNTHER.
STEAM ENGINE GOVERNOR.

No. 602,579.

Patented Apr. 19, 1898.



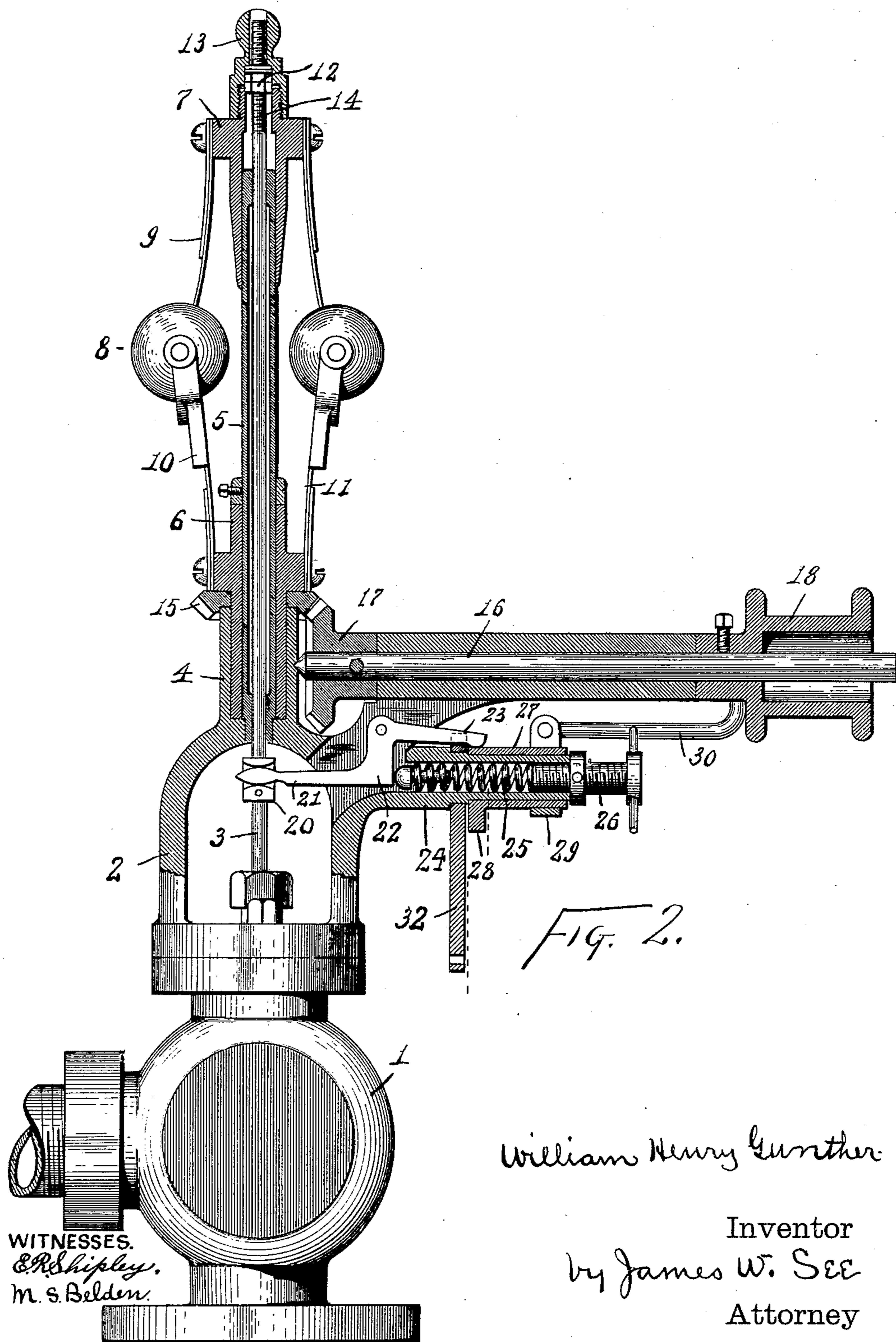
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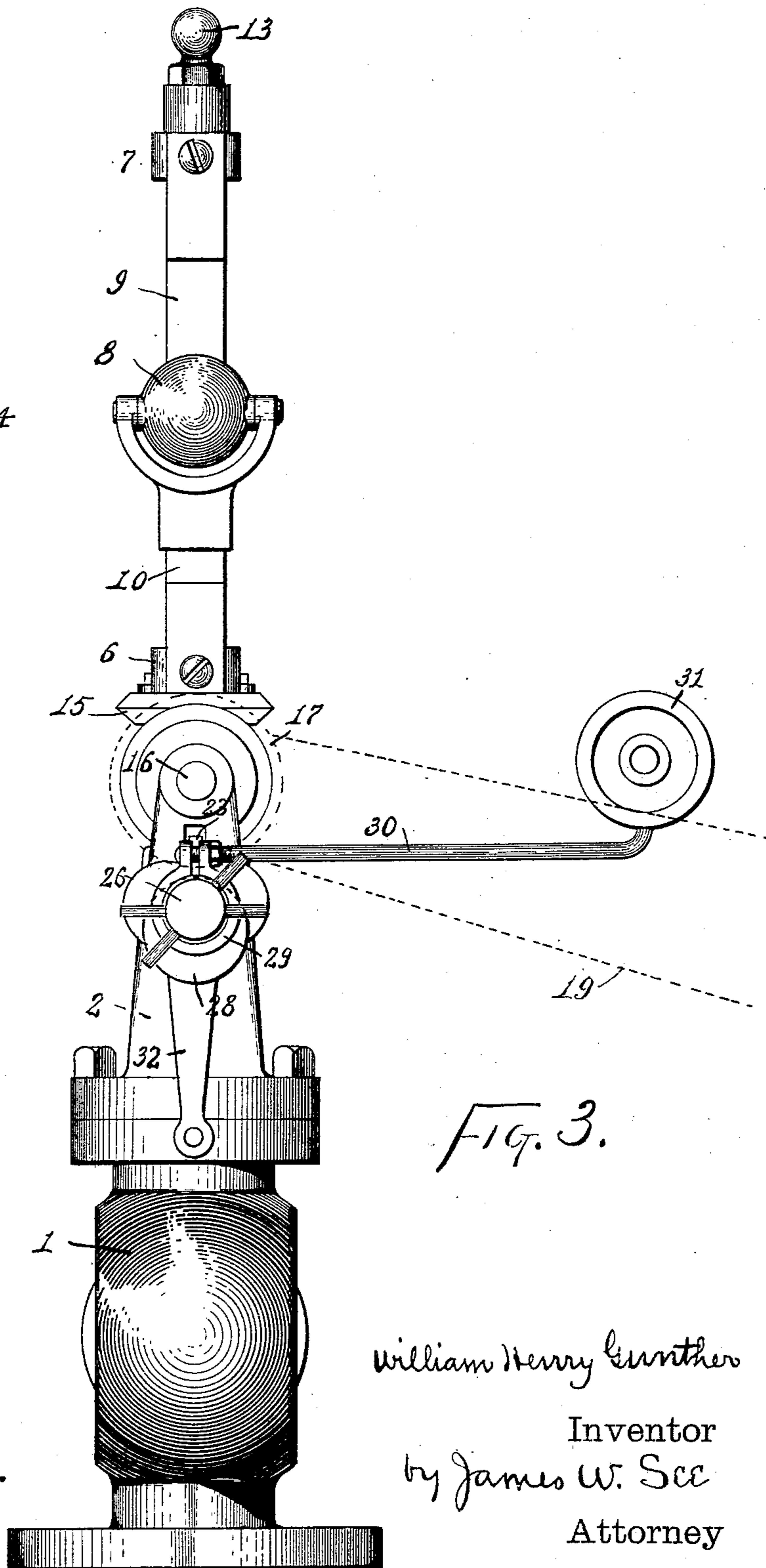
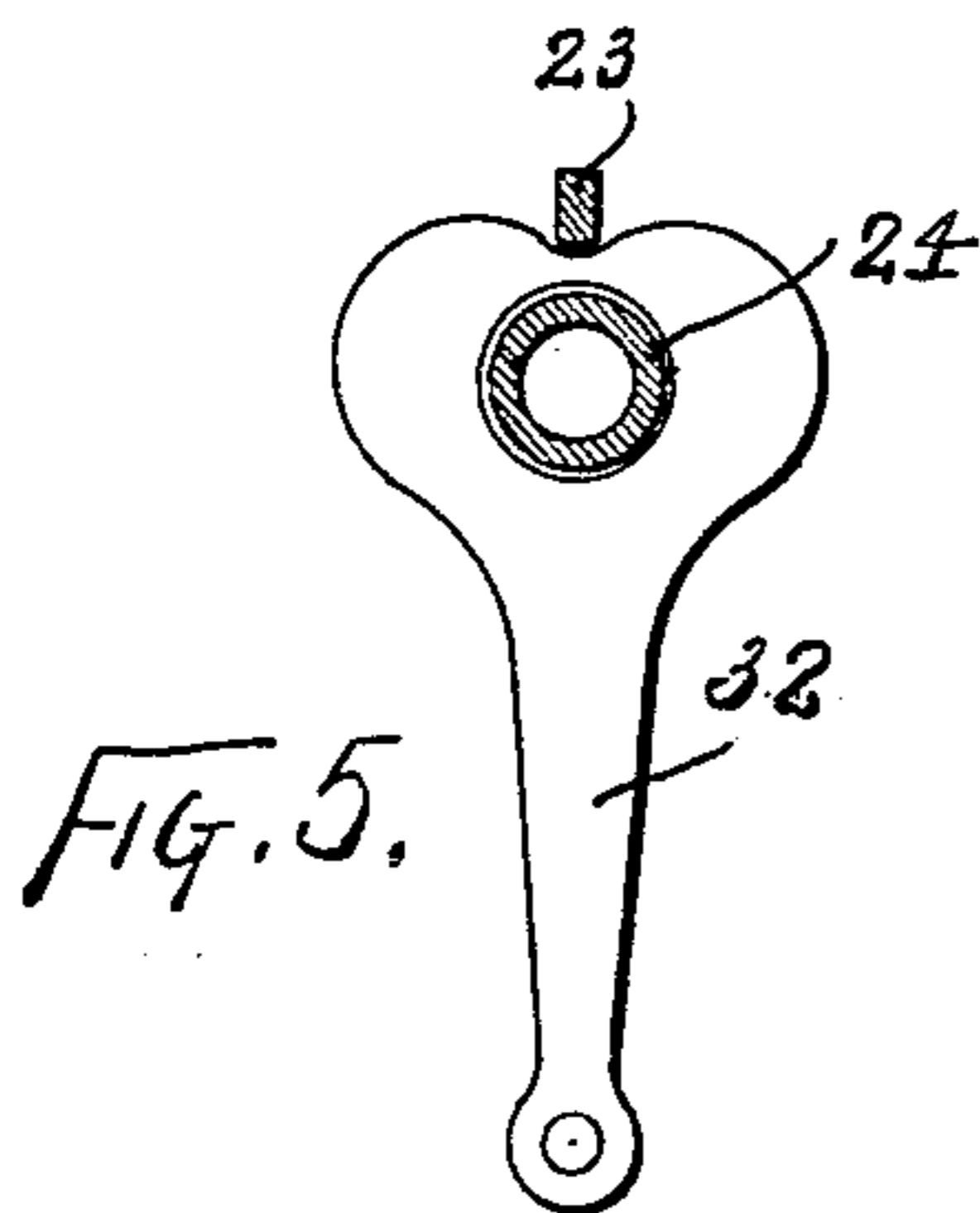
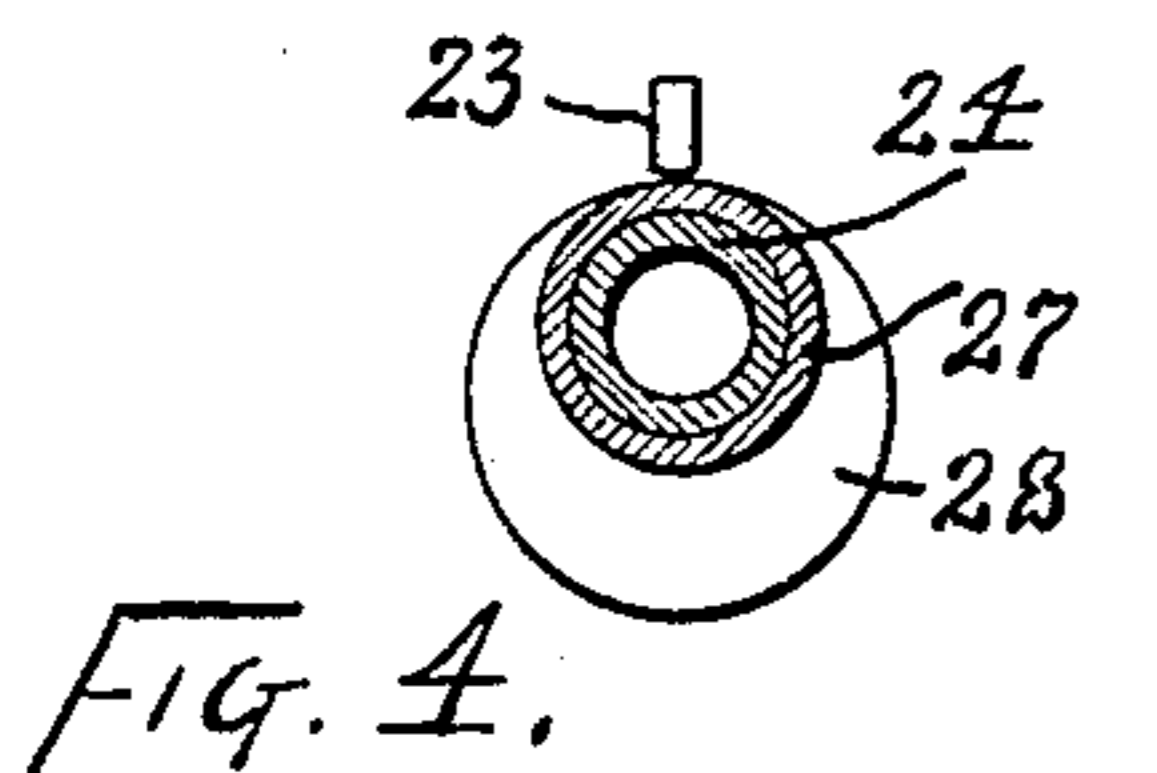
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Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM HENRY GUNTHER, OF OWENSBOROUGH, KENTUCKY.

STEAM-ENGINE GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 602,579, dated April 19, 1898.

Application filed October 7, 1897. Serial No. 654,340. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY GUNTHER, of Owensborough, Daviess county, Kentucky, have invented certain new and useful
5 Improvements in Steam-Engine Governors, of which the following is a specification.

This invention pertains to improvements in steam-engine governors which will be readily understood from the following description,
10 taken in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of a governor embodying my improvements; Fig. 2, a vertical section of the same; Fig. 3, a side elevation of the same; Fig. 4, a face view of the
15 safety-stop cam, and Fig. 5 a face view of the Sawyer's cam.

In the drawings, and giving special attention to Fig. 2, referring to the other drawings incidentally, 1 indicates the usual valve structure of throttling-governors; 2, the governor-housing mounted as usual thereon and comprising a bonnet for the valve-chamber, an arch over the stuffing-box, a bearing for
20 the driving-shaft, and a bearing for the vertical rotary parts; 3, the usual valve-stem attached to the governor-valve and projecting upwardly into attachment with the head of the governor, this stem closing the valve
25 by a downward movement; 4, the vertical bearing at the top of the housing, its axis coinciding with that of the valve-stem; 5, a journal-tube having its foot rigidly fixed in the housing at the base of bearing 4; 6, the governor-foot journaled within bearing 4 and upon the exterior of the journal-tube; 7, the governor-head turning and moving vertically upon the upper end of journal-tube 5; 8, the governor-balls; 9, the suspenders for
30 the balls, shown as thin flat springs having their upper ends attached to the governor-head and having their feet attached to the balls by horizontal pivots; 10, spring-links having their feet attached to the governor-foot and having their upper ends pivoted to
35 the governor-balls; 11, a collar on the journal-tube over the governor-foot 6 to keep the latter from rising; 12, lock-nuts near the top of the valve-stem and preferably surmounted

by one or more loose washers, these lock-nuts
50 thus forming an adjustable upwardly-presenting shoulder near the top of the valve-stem; 13, a cap-nut screwed upon the governor-head and having an interior shoulder engaging above the lock-nuts 12, whereby any
55 downward movement of the governor-head imposes a corresponding downward movement upon the valve-stem; 14, a chamber in the governor-head below nuts 12, permitting the valve-stem to descend independent of the
60 governor-head; 15, a bevel-gear fast on the governor-foot; 16, the driving-shaft journaled in the housing; 17, a bevel-gear fast on the inner end of the driving-shaft and engaging gear 15; 18, the driving-pulley; 19,
65 the usual driving-belt; 20, a jaw-block fast on the valve-stem within the arch of the housing; 21, an arm pivoted in the housing below the driving-shaft, the inner end of this arm engaging jaw-block 20, the pivot of the
70 arm being disposed some distance above the general plane of the end of the arm where it engages the jaw-block; 22, an outwardly-presenting hip formed on arm 21 below its pivot, this hip presenting itself outwardly away
75 from the valve-stem; 23, an arm formed with arm 21 and projecting outwardly from the pivot of the arm, arms 21 and 23 thus together forming a lever provided with a hip; 24, a tubular projection from the housing
80 under and parallel with driving-shaft 16 and under and in the vertical plane of arm 23; 25, a long helical spring compressed between said tubular projection, its inner end pressing inwardly upon hip 22; 26, an adjusting-screw
85 threaded into the outer end of the tubular projection and serving in adjusting the tension of spring 25, this screw having a lock-nut to make its adjustment secure; 27, a sleeve free to turn on the exterior of tubular
90 projection 24; 28, a cam on the inner end of sleeve 27, the outer end of arm 23 resting upon this cam, so that the turning of the cam will rock the arm, the cam being of such form and dimensions that when its least part is under
95 arm 23 the valve-stem may occupy its uppermost position and when the swell of the cam is under arm 23 the arm will be rocked and

the valve-stem brought to its lowermost position; or, in other words, the swell of the cam may serve in moving the valve-stem clear down and the low part of the cam leaves the movement of the valve-stem under the influence of the governor-head entirely uninterfered with; 29, a split clamp-collar clamped on the outer end of sleeve 27 and adapted for angular adjustment thereon; 30, an arm engaging the ears of the clamp-collar like a bolt and adapted to be supported thereby and serving also as the means for clamping the collar; 31, a pulley carried by the outer end of arm 30 and normally resting on the belt which drives the governor, and 32 a cam mounted on tubular projection 24 alongside cam 28 and having two lobes, each adapted when brought under arm 23 to raise the arm and close the valve, this cam having an operating-lever by which it may be turned.

As the governor-balls go outwardly under the influence of centrifugal force the governor-head moves downwardly and pushes the valve-stem down, thus closing the valve, and as the balls move inwardly the governor-head rises and spring 25 causes the valve-stem to also rise. Any downward movement of the valve-stem is obviously resisted by spring 25. This spring furnishes the centripetal force for the governor, and screw 26 serves in adjusting its tension, the spring and screw thus forming the speed adjustment for the governor and the spring being of such length as to give a great range of speed adjustment. In such performance the arm 23 and the cams and their attached parts have no agency.

Normally the swell of cam 28 is downward, so as to be without influence on arm 23, the valve-stem being thus at liberty to make complete excursions uninterfered with by the cam. Pulley 31 normally rests upon the governor-belt, and the adjustment of clamp-collar 29 upon the sleeve of the cam permits arm 30 and pulley 31 to be carried either to the front or rear of the governor, according to which way the belt leads, and to be adjusted vertically to suit the position of the belt. So long as pulley 31 is supported by the governor-belt cam 28 is inert; but if the governor-belt breaks or runs off its pulleys then pulley 31 will fall and the swell of the cam will act on arm 23 and obviously lower the valve-stem and close the valve, thus forming a safety-stop, and when the valve-stem is thus lowered by the safety-stop the movement is independent of any movement or lack of movement of the governor-balls or governor-head.

Cam 32 is for use when the governor is to be used as a Sawyer's valve, the valve-stem in such case moving independent of the governor-head.

I claim as my invention—

1. In a steam-engine governor, the combination, substantially as set forth, of a tubular projection carried by the governor-hous-

ing and having its axis intersecting that of the valve-stem, a lever projecting from said tubular projection to and into engagement with the valve-stem and mounted on a pivot carried by the governor-housing above and at right angles to the axis of said tubular projection, said lever presenting a hip below its pivot and in the line of the axis of said projection, a spring disposed within said tubular projection and engaging the hip of said lever, and an adjusting-screw mounted in said tubular projection and engaging the opposite end of said spring.

2. In a steam-engine governor, the combination, substantially as set forth, of a tubular projection carried by the governor-housing and having its axis intercepting that of the valve-stem, a lever projecting from said tubular projection to and into engagement with the valve-stem and mounted on a pivot carried by the governor-housing above and at right angles to the axis of said tubular projection, said lever presenting a hip below its pivot and in the line of the axis of said projection, a spring disposed within said tubular projection and engaging the hip of said lever, an adjusting-screw mounted in said tubular projection and engaging the opposite end of said spring, a cam mounted on the exterior of said tubular projection, an arm for turning said cam, and an arm formed upon said hipped lever and projecting over and into engagement with said cam.

3. In a steam-engine governor, the combination, substantially as set forth, of a tubular projection carried by the governor-housing and having its axis intercepting that of the valve-stem, a lever projecting from said tubular projection to and into engagement with the valve-stem and mounted on a pivot carried by the governor-housing above and at right angles to the axis of said tubular projection, said lever presenting a hip below its pivot and in the line of the axis of said projection, a spring disposed within said tubular projection and engaging the hip of said lever, an adjusting-screw mounted in said tubular projection and engaging the opposite end of said spring, a two-lobed cam mounted on the exterior of said tubular projection, an arm for operating said cam, a second cam mounted on said tubular projection, an arm connected with said second cam, a pulley carried by the last-mentioned arm and adapted to rest on the driving-belt of the governor, and an arm formed upon said hipped lever and projecting over and into engagement with said two cams.

4. In a steam-engine governor, the combination, substantially as set forth, of a tubular projection carried by the governor-housing parallel with the driving-shaft of the governor and having its axis intersecting that of the valve-stem of the governor, a helical spring disposed within said tubular projec-

tion, a cam mounted on the exterior of said
tubular projection, an arm projecting from
said cam and carrying at its outer end a pul-
ley adapted to rest upon the driving-belt of
5 the governor, a hiped lever pivoted to the
governor-housing above the axis of said tu-
bular projection and having a portion pro-
jecting from said spring to and into engage-

ment with the stem of the governor, and an
arm formed upon said lever and engaging 10
over said cam.

WILLIAM HENRY GUNTHER.

Witnesses:

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L. C. HEARNE.