

No. 754,828.

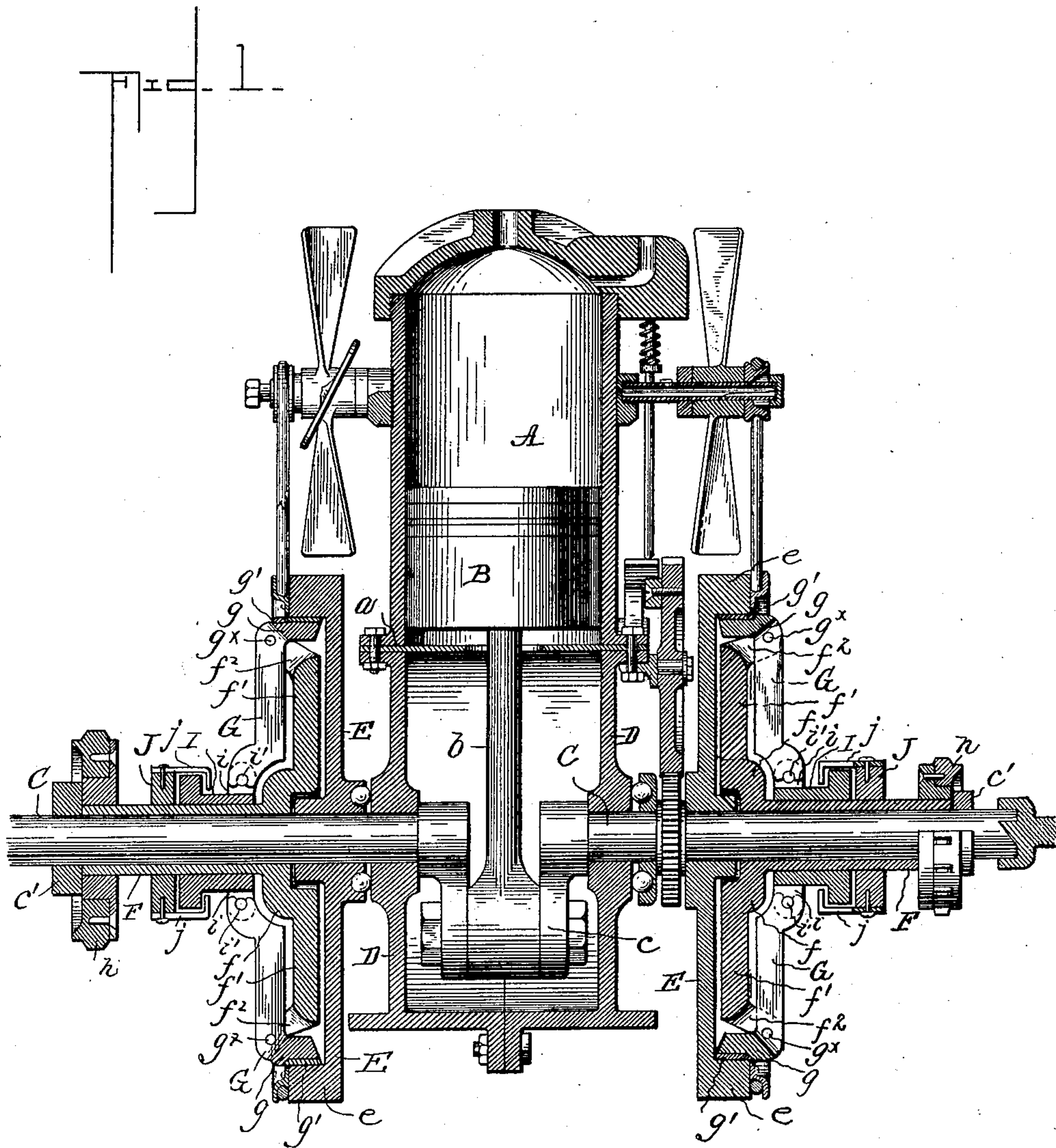
PATENTED MAR. 15, 1904.

C. F. THOMS.
CLUTCH MECHANISM.

APPLICATION FILED SEPT. 27, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
R. J. Beall
C. J. Paeder

Charles F. Thoms,
Inventor,
by *John B. Thomas & Co.,*
Attorney.

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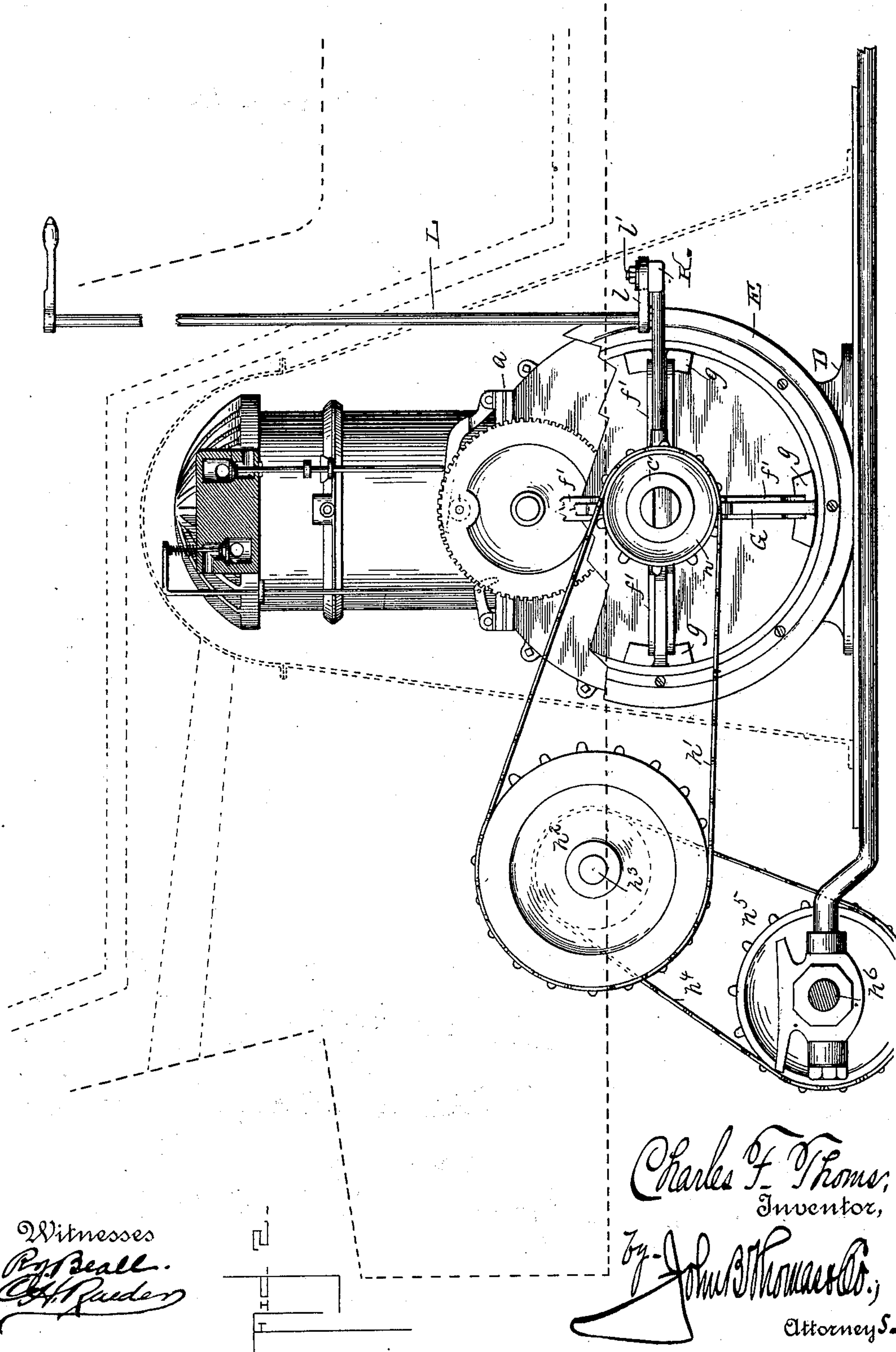
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R. J. Beall.
C. H. Rader

Charles F. Thoms,
Inventor,
By John B. Thomas & Co.,
Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES F. THOMS, OF HIGHLANDTOWN, MARYLAND, ASSIGNOR OF
ONE-HALF TO DAVID WRIGHT, OF HIGHLANDTOWN, MARYLAND.

CLUTCH MECHANISM.

SPECIFICATION forming part of Letters Patent No. 754,828, dated March 15, 1904.

Application filed September 27, 1902. Serial No. 125,124. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. THOMS, a citizen of the United States, and a resident of Highlandtown, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Clutch Mechanism; of which the following is a full description.

The objects of this invention are to provide improved clutch mechanism for the gearing between the main driving-shaft of the engine and the axle or shaft to which the power of the engine is to be transmitted.

The invention consists in the combination, with the fly-wheel on the engine-shaft, of clutch mechanism slidable upon a sleeve loosely mounted on the engine-shaft to turn independently thereof, said clutch mechanism comprising shoes in frictional engagement with the under side of the rim of the fly-wheel and carried by levers pivoted to spider-arms projecting from a hub at the inner end of the sleeve, whereby the rotatable sleeve may be thrown in and out of operation while the engine is in motion, the said sleeve being connected by sprocket-and-chain or other gearing to the axle or shaft to be driven.

The invention further consists in the particular construction and combination of parts, all as hereinafter fully described, and more specifically set forth in the appended claim.

In the accompanying drawings, which form a part of this specification, Figure 1 is a sectional view through a gas-engine and clutch mechanism constructed in accordance with my invention. Fig. 2 is a side elevation showing the clutch-actuating mechanism.

Referring to said drawings, A designates the engine-cylinder, B the piston, and C the engine-shaft, the latter being connected to the piston through the medium of the piston-rod *b* and crank *c*, as is usual. The engine-shaft is journaled in the side pieces of a casing D, which also supports the cylinder A, and between the connecting-flanges of the casing and cylinder is bolted a splash-plate *a*. The crank portion of the engine-shaft works in the casing D, and upon said engine-shaft at either

side of the casing is located the clutch mechanism, which I shall now proceed to describe.

The clutch mechanism is duplicated at either side of the engine, and therefore a description of one will answer also for the other, the same reference-letters being used to indicate corresponding parts in both.

E designates the fly-wheel, which is fast on the engine-shaft C to turn therewith, and beyond said fly-wheel and loosely mounted on the engine-shaft is a sleeve F, having at its end adjoining the fly-wheel a hub *f*, from which project radially a suitable number of spider-arms *f'*, four spider-arms being shown in the present instance. The outer ends of these spider-arms *f'* are provided with projecting ears *f''*, between which are pivoted levers G, carrying shoes *g* with wearing-plates *g'*, adapted to bear against the inner side of the rim *e* of the fly-wheel, and when said shoes are in frictional engagement with the rim of the fly-wheel they will turn therewith and being connected to the spider-arms will turn the sleeve from which said spider-arms project. At the outer end of the sleeve is a sprocket-wheel *h*, by which it is geared to the axle or shaft to be driven, as hereinafter described. To provide for throwing the shoes in and out of engagement with the rim of the fly-wheel, the inner ends of said levers are connected to a collar I, slidably mounted on the sleeve F and shifted by means of a ring J, connected to the operating mechanism hereinafter described. The inner ends of the levers G are confined between ears *i* on the collar I, being pivotally connected to said ears by pins *i'*, while the shifting-ring J is connected to the collar by fingers *j*, having bent ends which engage a peripheral projection on said collar. The shifting-ring J is operated by a horizontal bar K, to which it is connected by an arm *k*, and said horizontal bar is operated by a vertical rod L and connecting-link *l*, the latter being rigidly secured to the lower end of the rod and has a slot at its opposite end (indicated by dotted lines, Fig. 2) through which the connecting-pin *l'* passes. The operating-rod L is supported in suitable bearings so that when

turned moves the bar K longitudinally, and the rings J being directly connected to said bar will be moved or shifted upon the sleeve F to throw the clutch mechanism either in or
5 out of operation.

The sleeve F is held upon the engine-shaft at one end by the fly-wheel E and at the other end by a collar c' , fast to the shaft, and, as heretofore stated, the said sleeve is loosely mounted
10 on said engine-shaft, so that it may remain stationary when the clutch is out of engagement with the fly-wheel though the engine may be running at full speed. When it is desired that the sleeve turn with the fly-wheel and engine-
15 shaft, the friction-clutch mechanism is gradually thrown in engagement with the fly-wheel, so that the said sleeve will gradually attain the speed of the engine. In throwing the friction-clutch mechanism in operation with the
20 fly-wheel the ring J is pressed against the collar I by the rod L and intermediate connections and moving said collar toward the fly-wheel causes the arms or levers G to be swung upon their pivots g' , pressing the shoes g in frictional engagement with the rim of the fly-
25 wheel, and the said shoes turning with the fly-wheel will revolve the sleeve through the intervention of the spider-arms f' . The friction-clutch mechanism is thrown out of operation by
30 shifting the ring J in the opposite direction or from the fly-wheel, the fingers j engaging the peripheral projection of said collar to move the latter.

This friction-clutch mechanism is particularly adapted for application to gas-engines
35 employed with motor-vehicles, and is therefore duplicated on each side of the engine and the sleeves provided with different-size sprocket-wheels h , so that different speeds
40 may be obtained, and to this end the connection between the bar K and rod L is such that when the link l is in a central position the clutches are both out of operation, and when said link is shifted to either side of said central position one or the other of the clutch
45 mechanisms will be thrown in engagement with its fly-wheel. In gearing the engine to the driving-axle of a motor-vehicle the sprocket-wheels h are connected by chains h'
50 to sprocket-wheels h^2 on an intermediate shaft h^3 , and said intermediate shaft is connected by sprocket-wheel and chain h^4 to a sprocket-wheel h^5 on the driving-axle h^6 . It will be understood that when either friction-clutch
55 mechanism is connected with the engine the other clutch mechanism will be driven also, inasmuch as it is connected by the intermediate

shaft; but the said other clutch mechanism being freely rotatable and not correspondingly geared will not run at the same rate of speed. 60 For ordinary speed and hill-climbing the clutch mechanism having the lower speed-gear is thrown in operation, and for the highest speed the other clutch mechanism may be used.

From the foregoing description, in connection with the accompanying drawings, the construction, operation, and practical advantages of my invention will be readily understood, for by providing the improved friction-clutch mechanism and means for operating same the
70 axle or shaft to be driven by the engine may be started up gradually until the sleeve by which the power of the engine is transmitted attains the full speed of the engine, and by providing the duplicate set of clutch mechanisms different speeds can be had by throwing
75 either sets of shoes in intimate engagement with the fly-wheels. This is an important feature in that it saves the wear that would come upon the shoes of a single set of clutch mechanism in case the vehicle was run at less than
80 the full speed.

Having thus described my invention, what I claim as new, and desire to secure by Letters
85 Patent, is--

The combination with the shaft C, of the wheel E fixedly mounted thereon and having a laterally-projecting rim, a sleeve F loosely mounted on the shaft adjoining the wheel, spider-arms integral with and projecting from
90 the inner end of the sleeve and each having a pair of forwardly-projecting ears at its outer end, right-angle levers G pivoted between the ears of the spider-arms, the short horizontal members of said levers carrying shoes which
95 engage the rim while the longer members thereof extend substantially parallel with the spider-arms, a collar slidably mounted upon the sleeve and pivotally connected to the inner ends of the longer members of the afore-
100 said levers, an annular flange at the outer end of said collar, a grooved collar slidable upon the sleeve independent of the flanged collar and having bent fingers engaging the flange
105 thereon, and a shifting-lever having a yoke engaging the grooved collar, the parts being constructed and arranged as herein shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES F. THOMS.

Witnesses:

HORACE S. BEALL,
GRAFTON L. MCGILL.