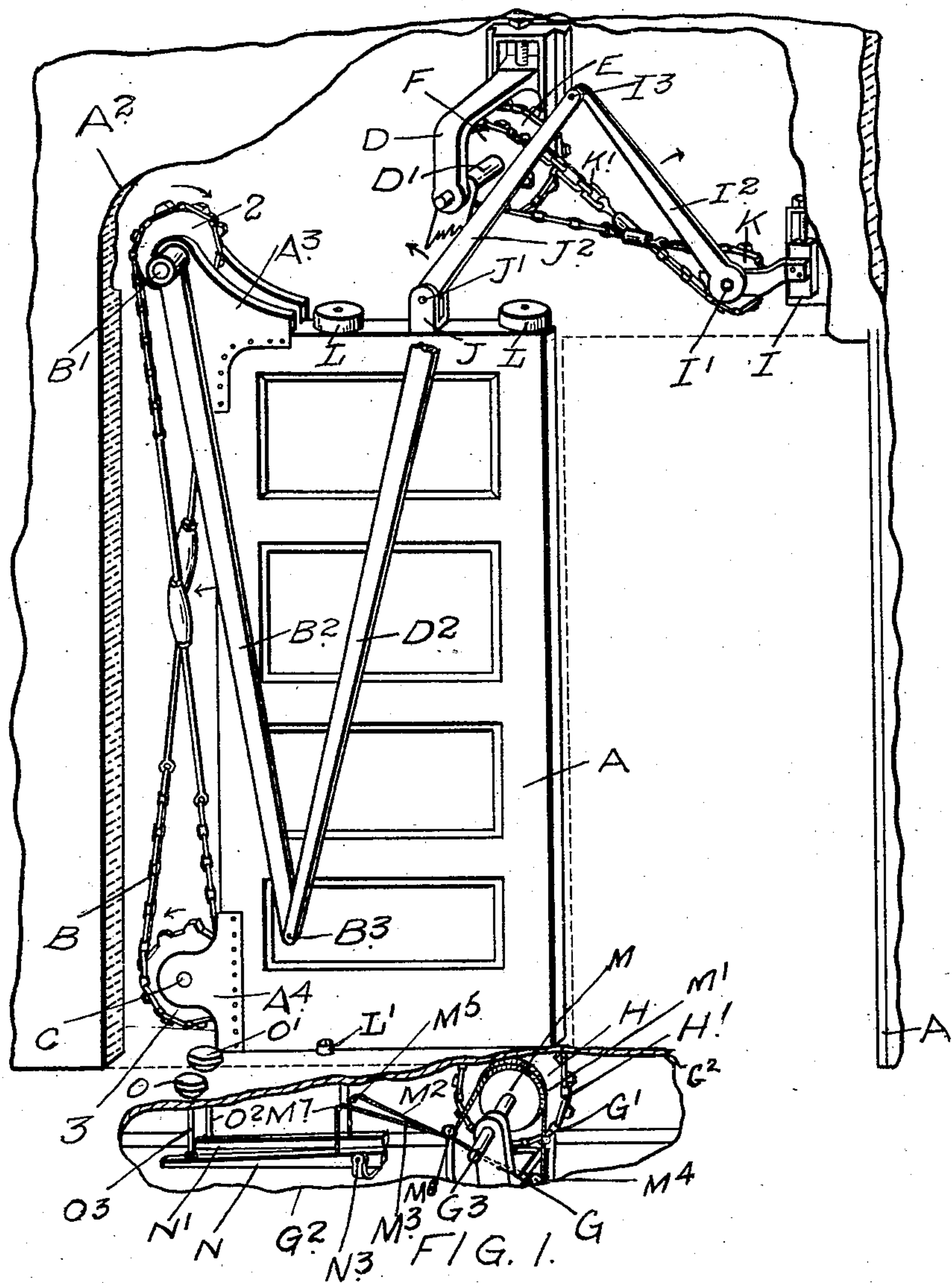


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DOOR AND GATE HANGER.
APPLICATION FILED MAR. 6, 1909.

969,005.

Patented Aug. 30, 1910.

4 SHEETS—SHEET 1.



WITNESSES.

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L. Wheeler

INVENTOR

H. TODD.

By *Fred. B. Felthorstonhaugh*

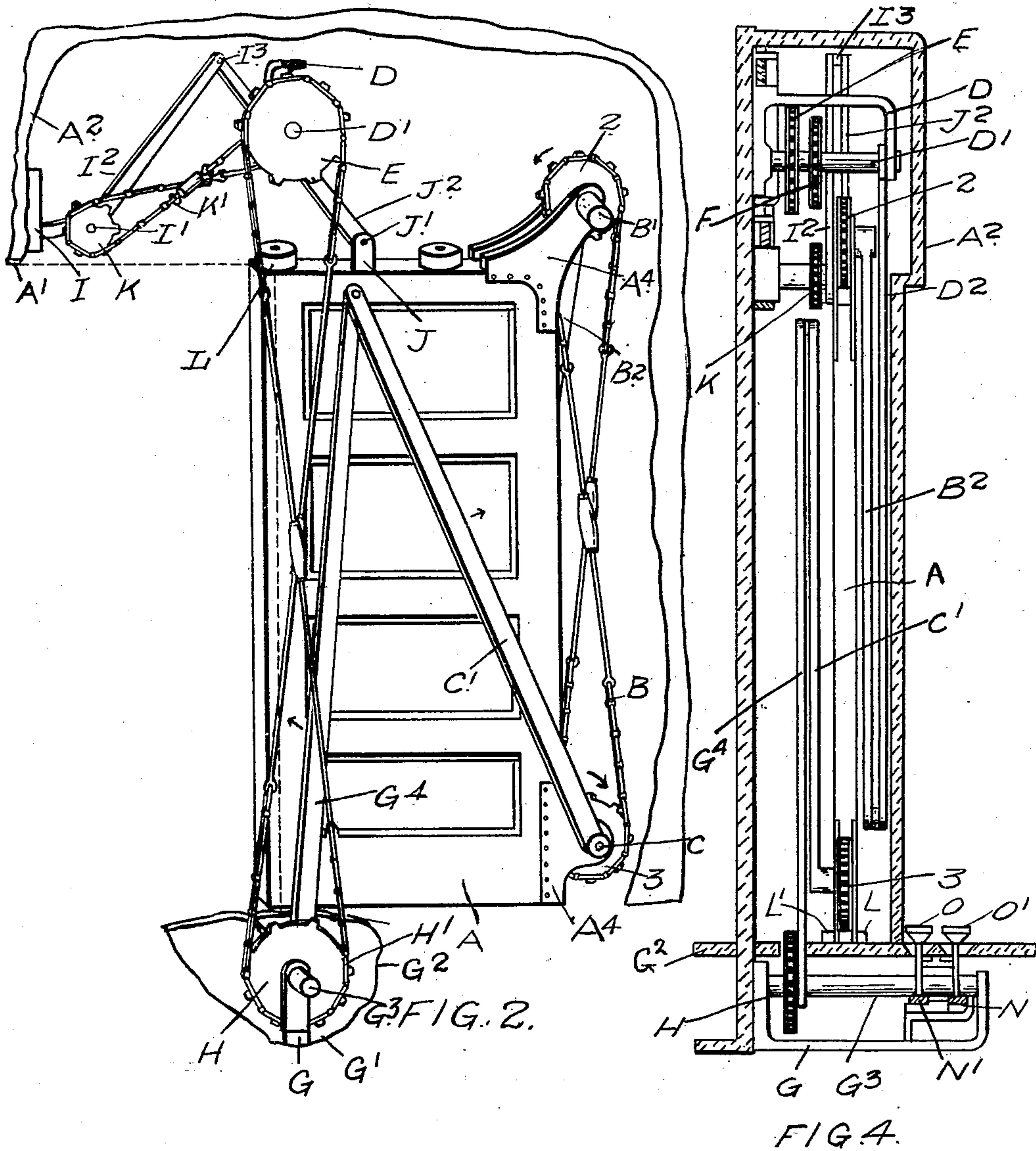
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 4.

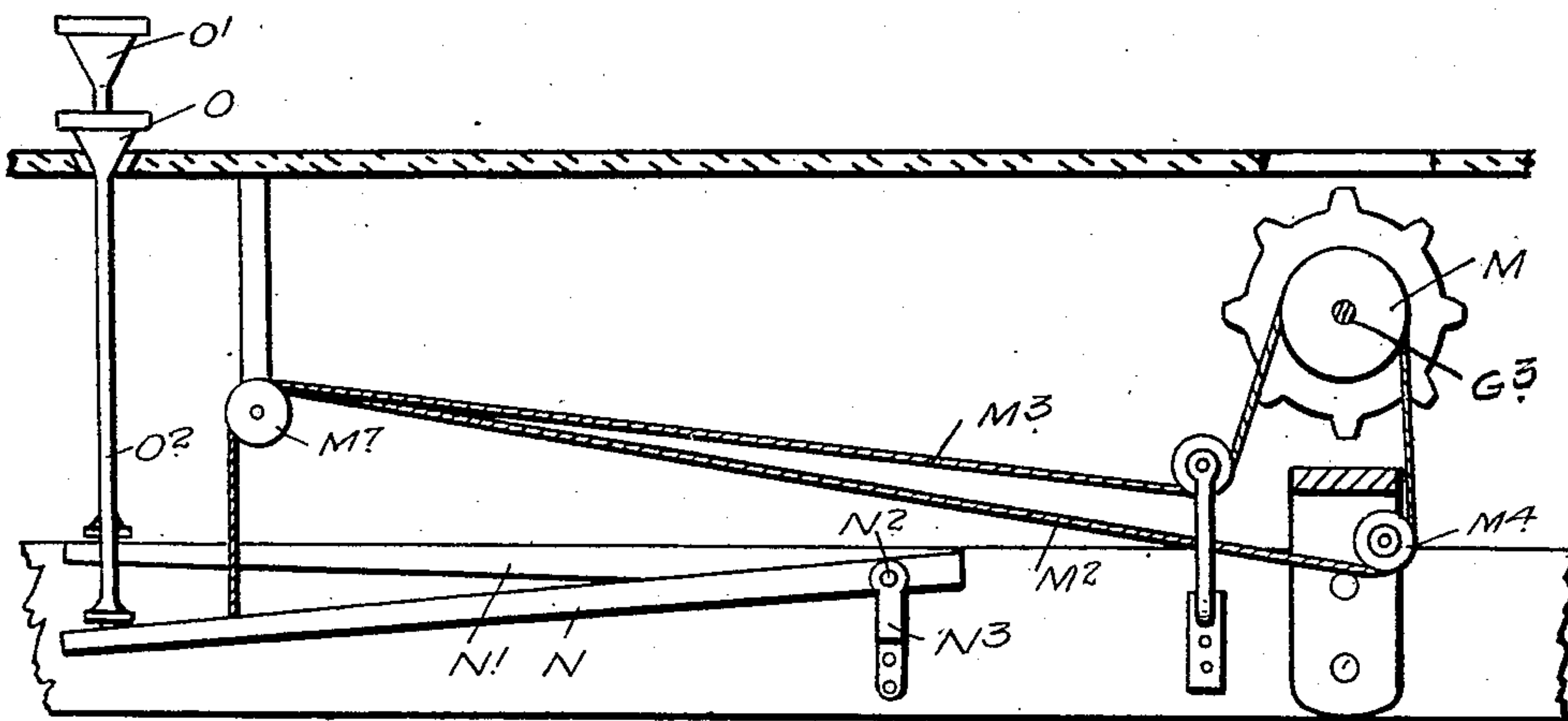


FIG. 5

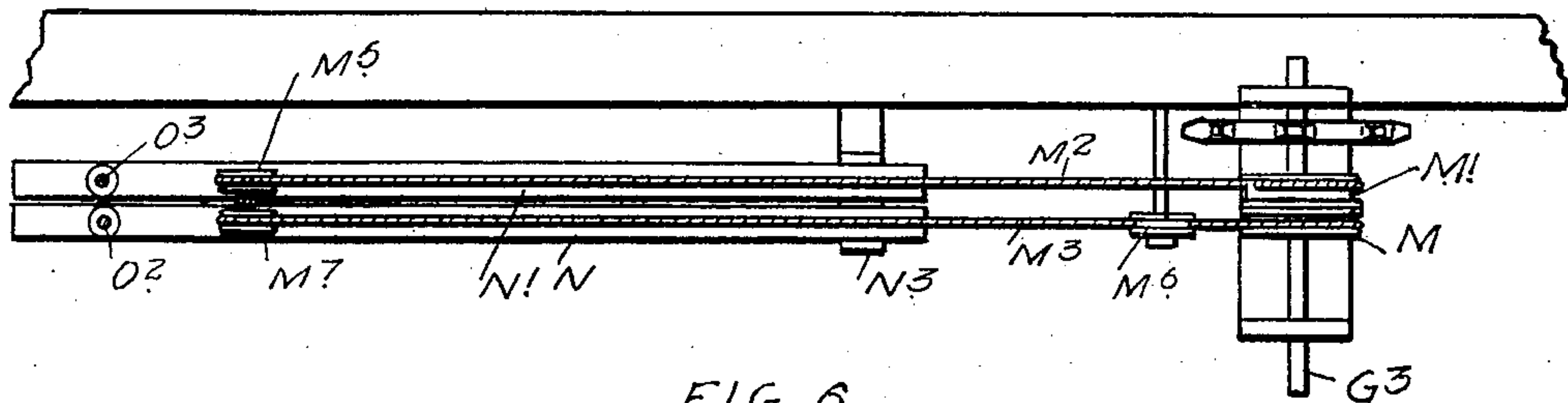


FIG. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE

HUGH TODD, OF SEATTLE, WASHINGTON.

DOOR AND GATE HANGER.

969,005.

Specification of Letters Patent.

Patented Aug. 30, 1910.

Application filed March 5, 1909. Serial No. 481,479.

To all whom it may concern:

Be it known that I, HUGH TODD, of the city of Seattle, in the county of King, in the State of Washington, one of the United States of America, have invented certain new and useful Improvements in Door and Gate Hangers, of which the following is the specification.

My invention relates to improvements in door and gate hangers and the object of the invention is to devise a strong and durable and efficient hanger which will always insure of the door moving evenly and without any liability of jamming, in which the use of tracks and wheels are dispensed with and in which all the working parts will be hidden from view in the door casing and by which the door is always kept in proper alinement. To effect this object I have constructed my invention in a manner which I will presently describe in reference to the accompanying drawing in which.

Figure 1, is a general perspective view of my door and gate hanger therefor showing the casing of the door broken away and in section and the door in the open position. Fig. 2, is a view looking from the opposite side of the door. Fig. 3, is a similar view to Fig. 1 showing the door in the closed position. Fig. 4, is a vertical sectional view taken through the door and door casing showing the cross connecting sprocket chains of the operating mechanism removed to more fully show the location and arrangement of the sprocket wheels operating the mechanism. Fig. 5, is an enlarged detail elevation of the foot plungers and co-acting parts. Fig. 6, is a plan view of the parts shown in Fig. 5.

In the drawings like letters of reference indicate corresponding parts in each figure.

A indicates a door, A' the door frame and A² the hollow door casing into which the door is moved when it is in its open position. The upper and lower inner corners of the door are provided respectively with spaced upwardly and outwardly projecting arms A³ and A⁵ between which are respectively journaled the sprocket wheels 2 and 3. The sprocket wheels 2 and 3 are connected by the cross sprocket chain B. On the spindle B' of the sprocket 2 is fixedly mounted a depending arm B². On the spindle C of the sprocket 3 is fixedly mounted an upwardly extending arm C' (see Fig. 2).

D is a journal bracket secured to a suit-

able portion of the interior of the door casing and in which is rotatably mounted the spindle D' carrying the sprocket wheels E and F and on which is fixedly mounted at one end the depending arm D². The lower end of the arms B² and D² are pivotally connected by a pin B³.

G is a bracket secured on a suitable beam G' located beneath the flooring G², and in which is rotatably mounted the spindle G³ carrying the sprocket wheel H and on which is fixedly mounted at one end the arm G⁴. The upper end of the arm G⁴ and arm C' are pivotally connected together. H' is a crossed sprocket chain connecting the sprocket wheel H with the sprocket wheel E.

I is a supplemental bracket in which is rotatably mounted the spindle I' carrying the sprocket K and on which is fixedly mounted the arm I².

J is a bracket secured to the top of the door intermediate of the width thereof and in which is rotatably mounted the pin J and on which is fixedly mounted the arm J². The upper ends of the arms J² and I² are pivotally connected together by a pin I³.

K' is a crossed sprocket chain connecting the sprocket wheel K and F.

L are rollers mounted on suitable pins secured to the door, so as to engage with a suitable guide-way formed at each side of the door casing to the inside thereof.

L' are rollers journaled in the flooring within the door casing to each end of the door and designed to form in conjunction with the roller L a guide for the door as it is being opened or closed.

M and M' are a pair of grooved pulleys mounted on the spindle G³ and on which are reversely wound the cord M² and M³. The cord M² passes from the pulley M' down around the supplemental bearing pulley M⁴ and from thence upwardly over the pulley M⁵. The cord M³ passes from the pulley M around the supplemental pulley M⁶ and thence over a pulley M⁷.

N and N' are a pair of levers journaled at one end thereof on a bearing pin N² mounted in a bracket N³ and provided with foot plungers O and O' pivotally connected at their opposite end by rods O² and O³. Such bracket N³ is supported on a suitable beam forming part of the flooring. To the levers N and N' are connected the free ends of the cords M² and M³.

It will be noticed upon referring to Fig. 1

that each of the cross sprocket chains are provided intermediately of the length thereof with connecting rods and turn buckles so that such chains may be readily adjusted to
5 take up any slack therein.

Having described the principal parts involved in my invention I will briefly describe the operation of the same.

By pressing upon the foot plunger O' with the foot the lever N' is depressed so as to pull on the cord M² and rotate the pulley M'. By this means the arm G⁴ is thrown into the direction indicated by arrow carrying the arm C' with it which as it moves forwardly is brought toward a perpendicular position thereby rotating the sprocket wheel 3 and carrying the door toward the closed position. By means of the cross connecting chain B' the sprocket wheel 2 is similarly
10 rotated so as to move the arm B² and draw on the arm D² to carry the upper end of the door toward the closed position. Simultaneously the sprocket wheel H being connected to the sprocket wheel E and the sprocket wheel F being mounted on the shaft D' the sprocket wheel K rotates by means of the cross sprocket chain K' so as to move the arms I² and J² in unison with the aforesaid arms. By this means the door is carried into
15 the closed position shown in Fig. 3. When it is desired to open the door the foot plunger O is depressed so as to operate the lever N, cord M³ and pulley M, so as to rotate wheel H and move the arm G⁴ in the opposite direction thereby giving a reverse motion to the mechanism to open the door.
20

From this description it will be seen that I have devised a very simple form of door hanger in which all pulleys and guides for
25 directly supporting the door are dispensed with and in which all the working parts are hidden from view in the door casing and which may be readily kept in alinement by adjusting the cross connecting sprocket chains by means of the turn buckles as before described.
30

What I claim as my invention is:

1. In a gate or door hanger, the combination with the door, of an arm mounted in a suitable bracket above the door and an arm mounted in a bracket extending from the rearmost upper corner of the door, said arm being pivotally connected at its lower end to said first mentioned arm, a supplemental
35 arm mounted in a bracket secured to the top of the door in proximity to the front thereof, and a co-acting arm mounted in a bracket above the door, the free ends of the supplemental and co-acting arms being pivotally connected together, and means operatively connected to said arms to swing the same to carry the door horizontally in a forward direction, as and for the purpose specified.
40

2. In a gate or door hanger, the combina-

tion with the door, of an arm mounted in a bracket located above the door, an arm mounted in a bracket extending from the rearmost upper corner of the door and pivotally connected at its lower end to the
45 aforesaid arm, an arm mounted in brackets located beneath the door, an arm mounted in a bracket located in proximity to the lowermost rear corner of the door and pivotally connected to the aforesaid arm mounted beneath the door, a supplemental arm mounted in a bracket secured to the top of the door in proximity to the front thereof, a co-acting arm mounted above the door, the free ends of the supplemental and co-acting arms
50 being pivotally connected together and means operatively connected to said arm for swinging the same so as to impart a horizontal backward or forward movement to the door, as and for the purpose specified.
55

3. In a gate or door hanger, the combination with the door, of arms swung in brackets located above and beneath the door, of co-acting arms mounted in brackets secured to the upper and lower rear angles of the
60 door, the free ends of the said co-acting arms being pivotally connected to the free ends of the arms mounted in the brackets above and beneath the door, a supplemental arm, a bracket in which the supplemental arm is swung located on the top of the door in proximity to the front thereof and a co-acting arm pivotally connected at one end of the supplemental arm and at its opposite end mounted in a suitable bracket secured to
65 the wall, connecting means between the arms for operating them in unison and means operatively connected to said arm for swinging the same to open and close the door as desired, as and for the purpose specified.
70

4. In a gate or door hanger, the combination with arms mounted in brackets located above and beneath the door, of co-acting arms mounted in brackets secured at the upper and lower rear corners of the door
75 and pivotally connected to the arms mounted above and beneath the door, a supplemental arm, a supplemental bracket in which the supplemental arm is located at the top of the door in proximity to the front thereof, sprocket gears and chains for connecting the arms together so that they operate in unison, a co-acting arm pivotally connected to the supplemental arm at one end and mounted in brackets secured to a suitable portion of
80 the wall at its opposite end, a foot lever and connecting means operatively connecting said lever and the arms whereby the arms are caused to move in unison to open and close the door, as and for the purpose specified.
85

5. In a gate or door hanger, the combination with the door, of an upper shaft rotatably mounted in a suitable bracket above the door and a lower shaft mounted in a
90

suitable bracket beneath the door, sprocket
gears mounted upon the upper and lower
shafts, a crossed chain connecting the upper
and lower sprockets, arms connected to the
5 upper and lower shafts, upper and lower
sprockets mounted in brackets located at
the upper and lower rear corners of the door,
a cross chain connecting such sprocket, arms
connected to the sprocket at one end and
10 pivotally connected at their opposite ends
to arms extending from the upper and lower
shafts, a supplemental arm, a bracket in
which the supplemental arm is swung se-
cured to the top of the door in proximity
15 to the front thereof, a co-acting arm piv-
otally connected at one end to the supple-
mental arm and at its opposite end to a
shaft mounted in a suitable bracket secured
to a suitable portion of the wall, a supple-
20 mental sprocket mounted on the upper shaft,
a sprocket mounted on the shaft of the co-
acting supplemental arm, a crossed sprocket

chain connecting said sprocket with the sup-
plemental sprocket and mechanism con-
structed and arranged for rotating the lower 25
shaft to swing the arms and carry the door
to an open or closed position, as and for the
purpose specified.

6. In a gate or door hanger, the combina-
tion with the door, the lower shaft mounted 30
in brackets located beneath the door, the
sprocket mounted thereon and the swinging
arms by which the door is supported, of
means for rotating the lower shaft to swing
the arms comprising a pair of pulleys mount- 35
ed on the lower shafts, cords reversely wound
on the pulleys, and foot levers swung on
suitable supports to which the opposite ends
of the cords are connected, as and for the
purpose specified.

HUGH TODD.

Witnesses:

WILLARD L. READ,
S. S. KENWORD.