(No Model.) 2 Sheets—Sheet 1.

G. H. A. MEYER.

MOTOR.

No. 516,503. Patented Mar. 13, 1894.

Fig. 1

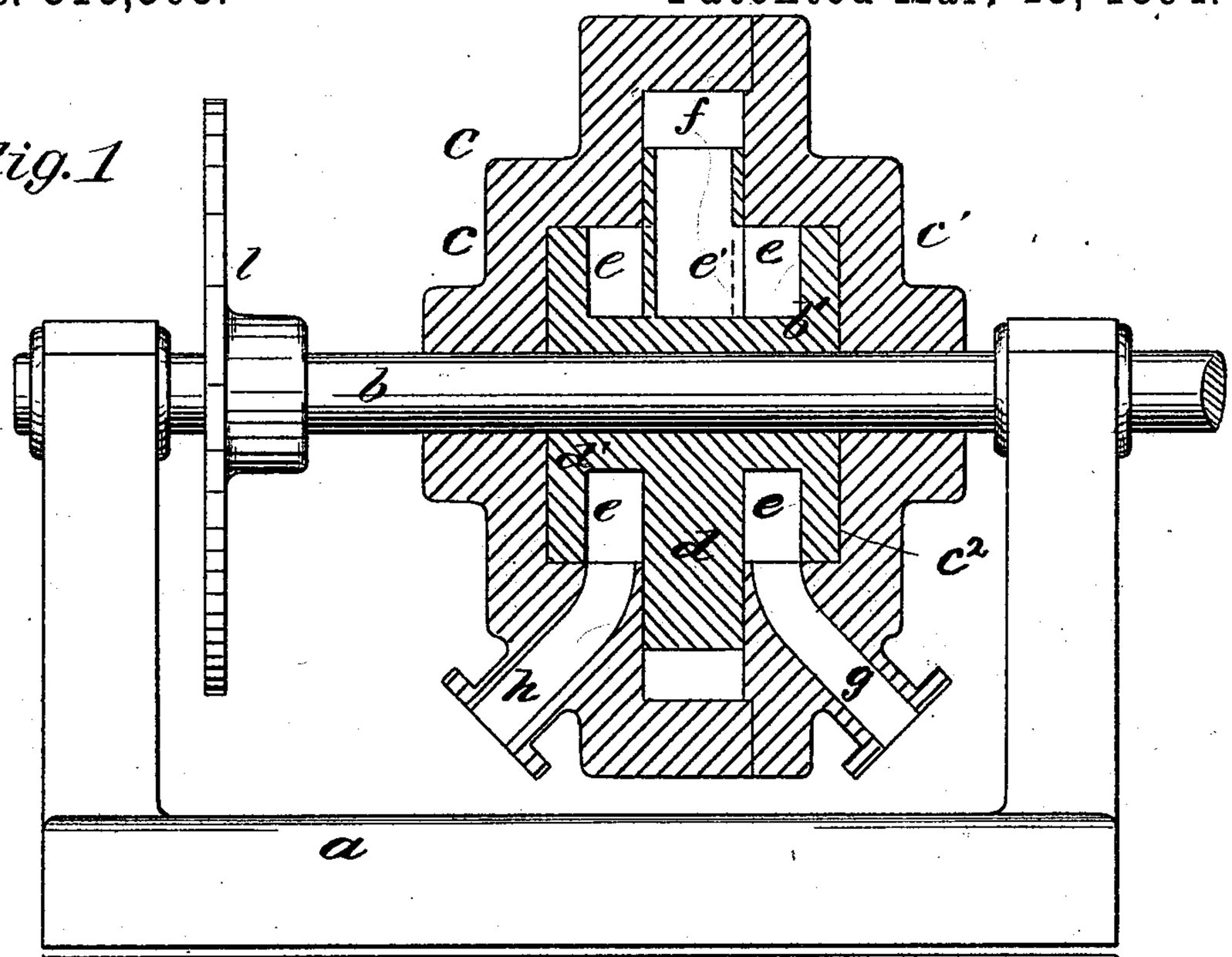
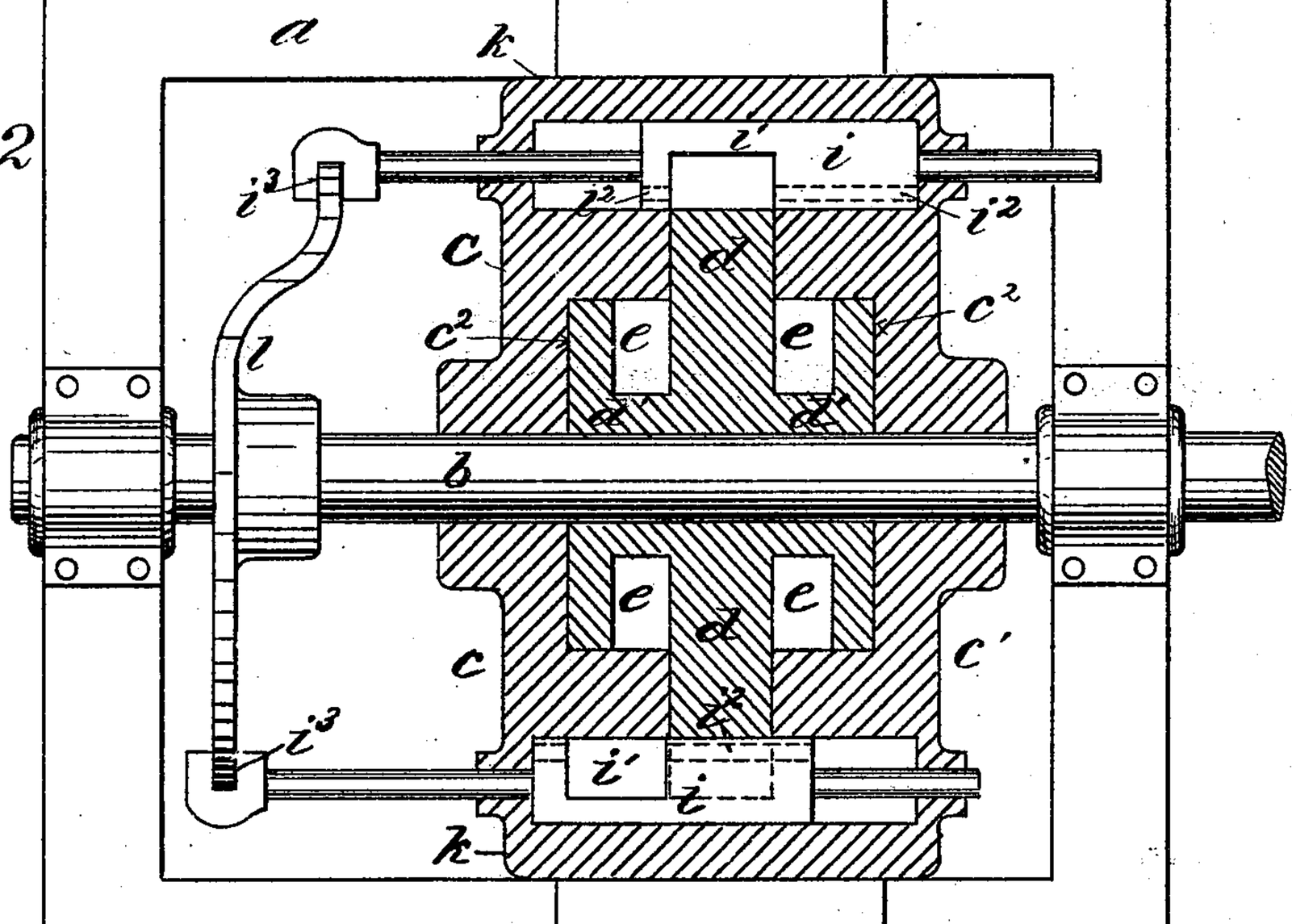


Fig. 2



Witnesses:
A. B. Jenkins.
J. Stern.

Inventor:
George H. A. Meyer.
By Chas. L. Burdett,
Atty.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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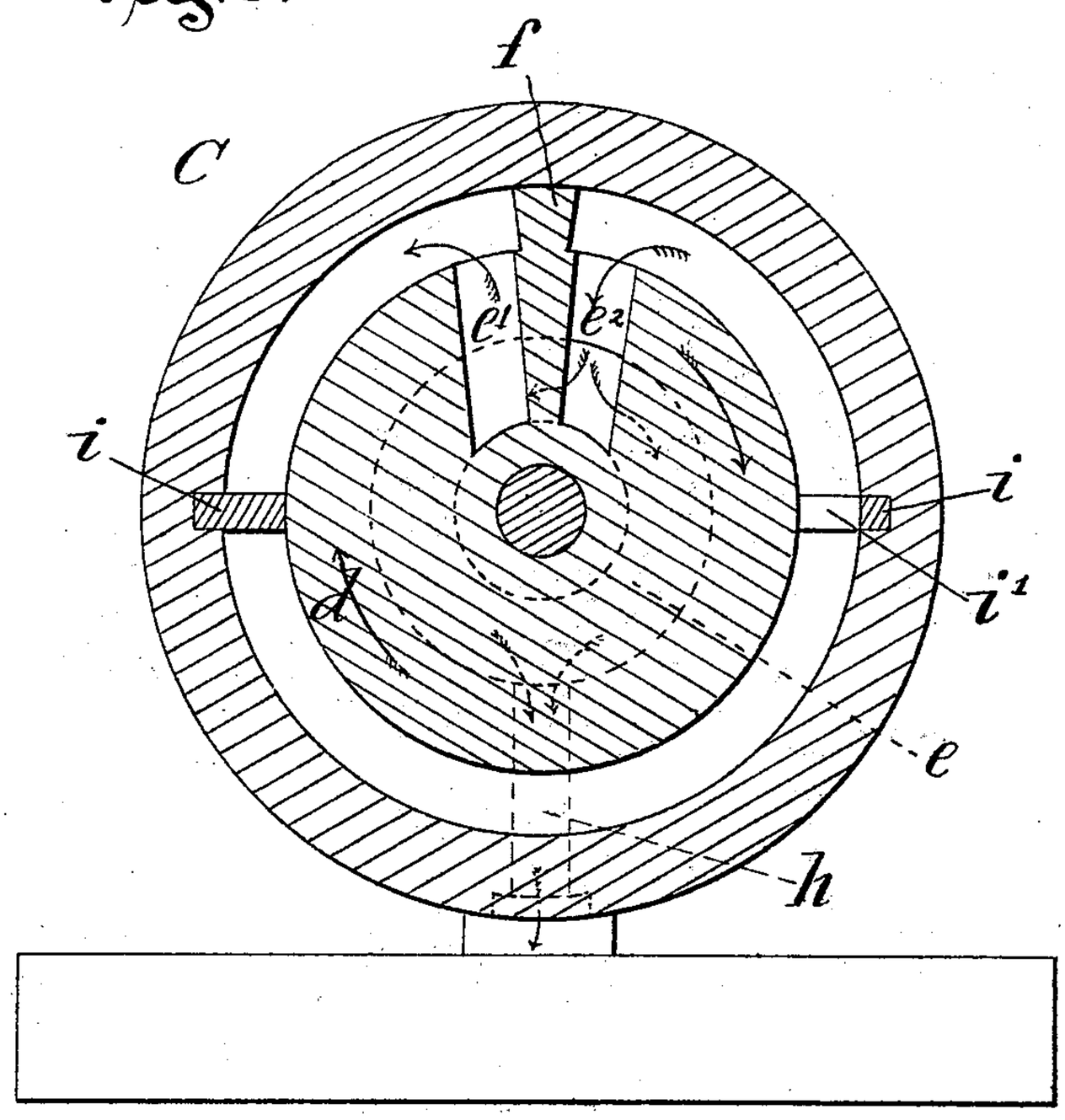
Fig. 3.



Witnesses:
Joseph Arthur Cantin
Arthur B. Jenkins.

Inventor:
George H. A. Meyer.
by
Chas. L. Burdett,
Attorney.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE H. A. MEYER, OF HARTFORD, CONNECTICUT.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 516,503, dated March 13, 1894.

Application filed August 19, 1891. Serial No. 403,128. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. A. MEYER, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Motors, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates to the class of devices that operate by the pressure of a fluid that passes into and exhausts out of the structure through certain ports, and the object of my invention is to provide a device of this class that shall be simple, compact and comparatively efficient in operation and one in which no lateral pressure is exerted on the piston.

To this end my invention consists in details of the several parts making up the device as a whole and in their combination as more particularly hereinafter described and pointed out in the claims.

Referring to the drawings:—Figure 1 is an end view in central vertical section of the device. Fig. 2, is a top or plan view in horizontal section of the device. Fig. 3 is a detail view in vertical section of the device on plane at right angles to Fig. 1 and centrally of the shell therein shown.

In the accompanying drawings the letter *a* denotes the bed of the structure on which is mounted a shaft *b* in suitable bearings. The shaft extends across the bed above it and through a casing C that is composed of two parts *c c'*, that are preferably secured together as by means of bolts, the shaft being free to turn within the casing.

Inside of the casing C a circular disk *d* is located and it is secured to the shaft. This disk is provided on both sides of its center with projecting hubs *d'* in which annular channels *e* are formed close to the sides of the disk. The hubs *d'* fit in sockets c^2 formed in the inner sides of the casing, the wall of the sockets on the respective sides forming the remaining side for each of the channels *e*. An opening *e'* is made in the substance of the disk *d* and it extends from the side of the channel *e* in the hub outward through the disk to its periphery where it opens back of a projecting piece *f* that forms a piston. There is a like opening e^2 formed in the substance of the disk, extending from the channel opposite to the one first described, and having an opening on the side of the disk at its periphery on the opposite side of the piston to the opening *e'* first described.

In the casing C there is formed a port *g* that communicates with the channel *e* on that side of the disk nearest to the port, and an outlet port *h* is made in the shell of the casing on the opposite side and it communicates with the channel *e* on the side of the disk opposite from the inlet port. On diametrically opposite sides of the casing sliding valves *i* are arranged in valve chests *k* in the casing and are operated so as to form an abutment at times and at other times to be so placed as to allow the projecting piston *f* to pass through the recess *i'* that is made of a proper dimension to permit passage of the piston in the rotary movement of the disk. These valves are so arranged that when one of them is in a certain position the piston *f* is allowed a free passage through it, and that on the opposite side of the casing will be in such position that it offers an obstruction to the passage of any fluid and forms a solid wall against which the pressure of the fluid may be exerted. These valves are reciprocated by means of the cam plate *l* that is secured to the shaft *b*, the edges of the cam plate passing through slots i^3 provided in the piston rod. This cam plate is so constructed that as the piston in the rotation of the disk approaches one of the valves it is slid to one side so as to allow the piston to pass and is then immediately returned so as to form an abutment against which the pressure of the fluid may be exerted. The construction of the channels in this form provides for the entrance of the fluid in a manner that will not cause any lateral pressure that would tend to crowd the disk sidewise, the disk being balanced so far as any sidewise pressure is concerned.

The operation of the device is as follows: The fluid used to drive the device passes in through the inlet *g* into the channel *e*, through the opening *e'* into the space back of the piston *f*. In this position of the parts, the valve immediately back of the piston is in such position that an abutment is formed against which the liquid thrusts driving the piston

forward and rotating the shaft. The fluid in the space in front of the piston is forced out through the openings e^2 and e on the opposite side of the disk and passes out through the outlet h. As the piston advances, the valve immediately in front of it is thrown into such position that the piston is allowed to pass through the recess in it the valve immediately after the piston has passed through returning and forming the next abutment against which the pressure of fluid is exerted, each valve being withdrawn just before the piston reaches it and immediately returned to its former position after the piston has passed. In each of the valves a relief port i^2 is formed that consists of an opening made lengthwise from end to end of the valve for the purpose of allowing a free flow of steam, air or other fluid from out the space in front of the valve as it advances toward either end of its chamber in the valve chest.

Whenever desired the direction of the rotary movement of the disk may be reversed by changing from the inlet described to what has been termed the outlet and using the latter as the inlet for the fluid; and by driving the shaft by suitable means the device may be made to operate as a pump instead of as a motor.

The end of the valve rod extends from the farther or outer end of the valve through the wall of the valve chest to the outside so that the valve may be perfectly counterbalanced.

I claim as my invention—

1. In a motor in combination with a shaft, a disk secured thereto and having a projection on the periphery forming a piston, hubs on opposite sides of the disk each having an annular channel formed in the periphery thereof, an opening from each channel through the disk to the periphery on opposites sides of the piston, a casing inclosing the disk and the valves and valve operating mechanism, all substantially as described.

2. In combination in a motor the base, the shaft supported thereon, a disk secured to the shaft having a piston projecting from the periphery and hubs on opposite sides, the annular channels in the periphery of the hubs with openings extending from the respective channels through the substance of the disk to the periphery thereof on opposite sides of the piston, a sectional case inclosing the disk and its hubs and inlet and outlet ports formed on opposite sides of the disk through the casing, and sliding valves located in valve chests on opposite sides of the casing and having openings for the passage of the piston, all substantially as described.

3. In a motor in combination with the shafts, the disk secured thereto and having a projection on the periphery forming a piston, hubs on opposite sides of the disk each having an annular channel formed in the periphery of the hub, an opening from each channel through the disk to the periphery on opposite sides of the piston, a casing inclosing the disk and having inlet and outlet ports, a valve chest with reciprocating valves each having an opening for the passage of the piston, a relief port extending lengthwise of the valve, and the valve operating mechanism, all substantially as described.

4. In combination in a motor, the base, the shaft supported thereon, a disk secured to the shaft and having a piston projecting from the periphery and with hubs on opposite sides, the annular channels in the periphery of the hubs with openings extending from the respective channels through the substance of the disk to the periphery thereof on opposite sides of the piston, a sectional case inclosing the disk and its hubs, and inlet and outlet ports formed on opposite sides of the disk through the casing, and sliding valves located in valve chests on opposite sides of the casing and projecting through the walls thereof at opposite ends and having openings for the passage of the piston, all substantially as described.

GEORGE H. A. MEYER.

Witnesses:
CHAS. L. BURDETT,
A. B. JENKINS.