

H. T. C. KRAUSS.
Valve-Motions for Steam-Pumps.

No. 154,683.

Patented Sept. 1, 1874.

Fig: 1.

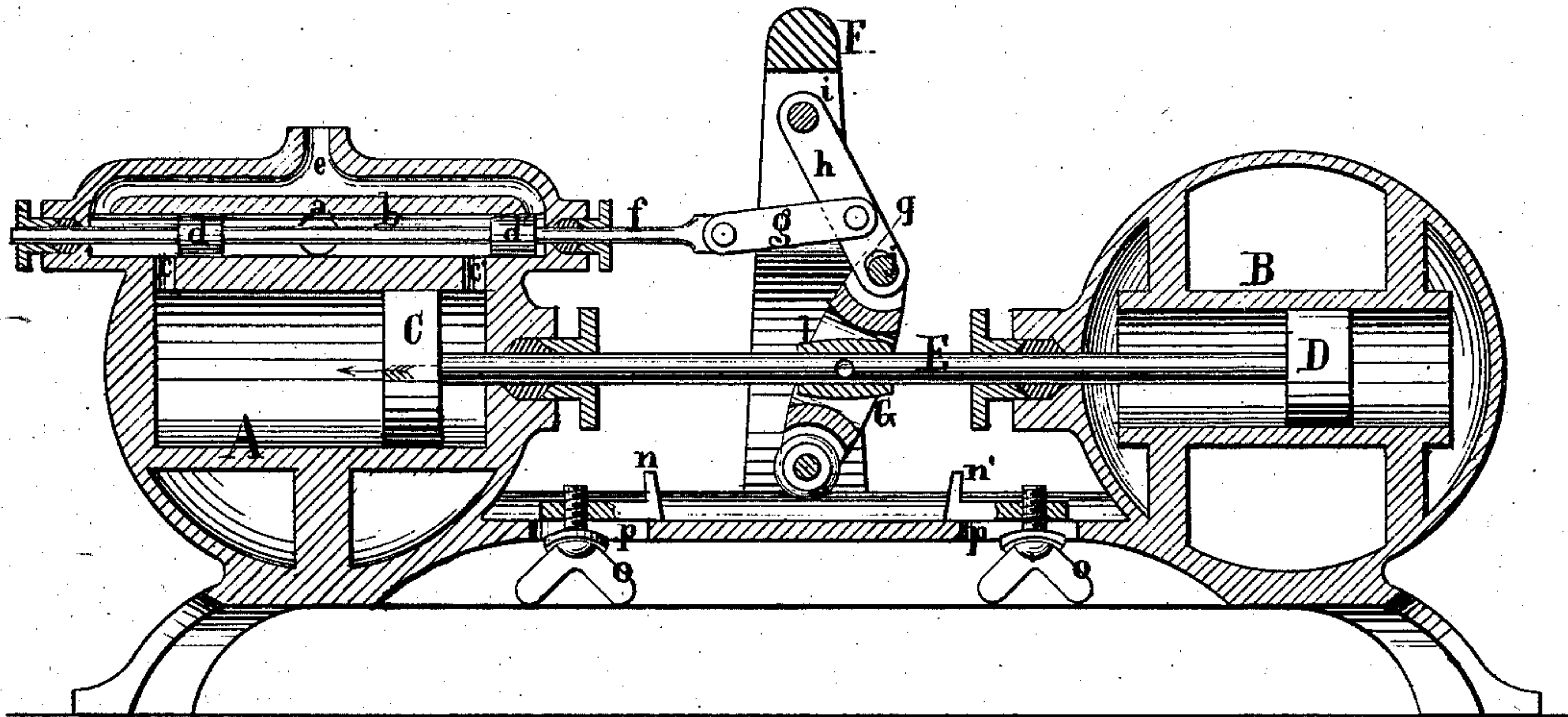
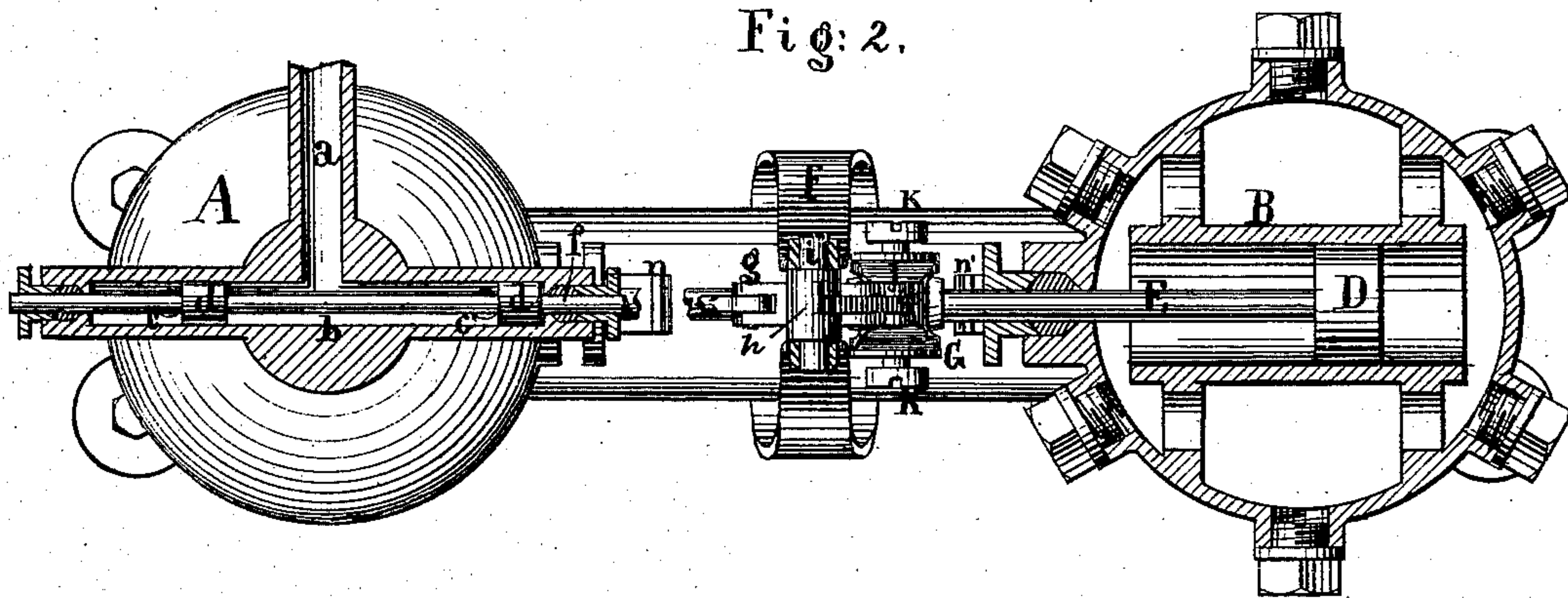


Fig: 2.



Witnesses:
Chas. Wahlen.
Henry Gentner

Inventor:
Herman T. C. Krauss
by Van Santvoord Krauss
his atty

UNITED STATES PATENT OFFICE.

HERMANN T. C. KRAUSS, OF FISHKILL, NEW YORK.

IMPROVEMENT IN VALVE-MOTIONS FOR STEAM-PUMPS.

Specification forming part of Letters Patent No. 154,683, dated September 1, 1874; application filed June 24, 1874.

To all whom it may concern:

Be it known that I, HERMANN T. C. KRAUSS, of Fishkill, in the county of Dutchess and State of New York, have invented a certain new and Improved Valve-Motion for Steam-Pumps, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 represents a longitudinal section. Fig. 2 is a horizontal section.

Similar letters indicate corresponding parts.

This invention consists in the combination of a trip-lever with the piston-rod of a direct-acting steam-pump, which trip-lever is connected by a secondary lever and link with the valve-rod, and acts against stops secured to the frame of the pump in such a manner that the steam-valve is thrown, and the steam is changed, before the steam-piston has fully reached either end of its stroke, and thereby the slamming of said piston against the cylinder-heads is prevented, and a steady motion is imparted to the pump.

In the drawing, the letter A designates the steam-cylinder of a direct-acting steam-pump. B is the pump-cylinder; C, the steam-piston, and D the pump-piston, which connects with the steam-piston by the rod E. The steam-cylinder is supplied with steam through a pipe, *a*, which leads into the valve-chamber *b*, from which extend ports *c c'* into the cylinder. In the chamber *b* moves the valve *d*, which, in the example represented by the drawing, consists of two piston-valves, and as the position of this valve is changed the ports *c c'* are alternately brought in communication with the exhaust-port *e*. The valve-rod *f* connects by a link, *g*, with a lever, *h*, which has its fulcrum on a pivot, *i*, secured in the upper portion of a yoke, F, which rises from the frame of the pump. The lever *h* connects by a pivot, *j*, with the trip-lever G, which straddles the piston-rod E and swings on two screws, *k*, that are secured in a sleeve, *l*, fastened on the piston-rod. In the lower end of the trip-lever is mounted a friction-roller, *m*. As the piston-rod reciprocates this friction-roller comes in contact with stops *n n'*, which are secured in

the frame of the pump, and which are adjustable by set-screws *o* and slots *p*. The pivot *j*, which forms the connection between the lever *h* and the trip-lever G, moves in a slot, *q*, in the lever *h*.

When the steam-piston moves in the direction of the arrow marked on it in Fig. 1, the valve *d* is in such a position that steam is admitted through the port *c'*, while the port *c* communicates with the exhaust-port *e*. As the piston approaches the end of the stroke the roller *m* of the trip-lever strikes the stop *n*, and by the action of said trip-lever on the lever *h* the valve *d* is suddenly changed before the piston has reached the end of its stroke, so that steam enters the cylinder A through the port *c*, and the piston C is cushioned and prevented from slamming against the cylinder-head. At the same time a full head of steam is brought to bear on the piston, so that the same will commence its return-stroke with full power.

By adjusting the stops *n n'* the time for throwing the steam-valve may be changed according to the stroke of the steam-piston and to the speed with which the same moves, and this time may be further changed by increasing the length of the trip-lever below the piston-rod.

By this arrangement a direct-acting steam-pump can be operated with great regularity, and the parts of my valve-motion are so situated that they can be readily reached at all times, whenever it may be desirable.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of a trip-lever, G, hinged to the piston-rod E, with the lever *h*, valve-rod *f*, valve *d*, stops *n n'*, and with the steam-piston of a direct-acting steam-pump, all constructed and operating substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand.

HERMANN T. C. KRAUSS.

Witnesses:

SAMUEL HOWE,
J. J. HUPFER.