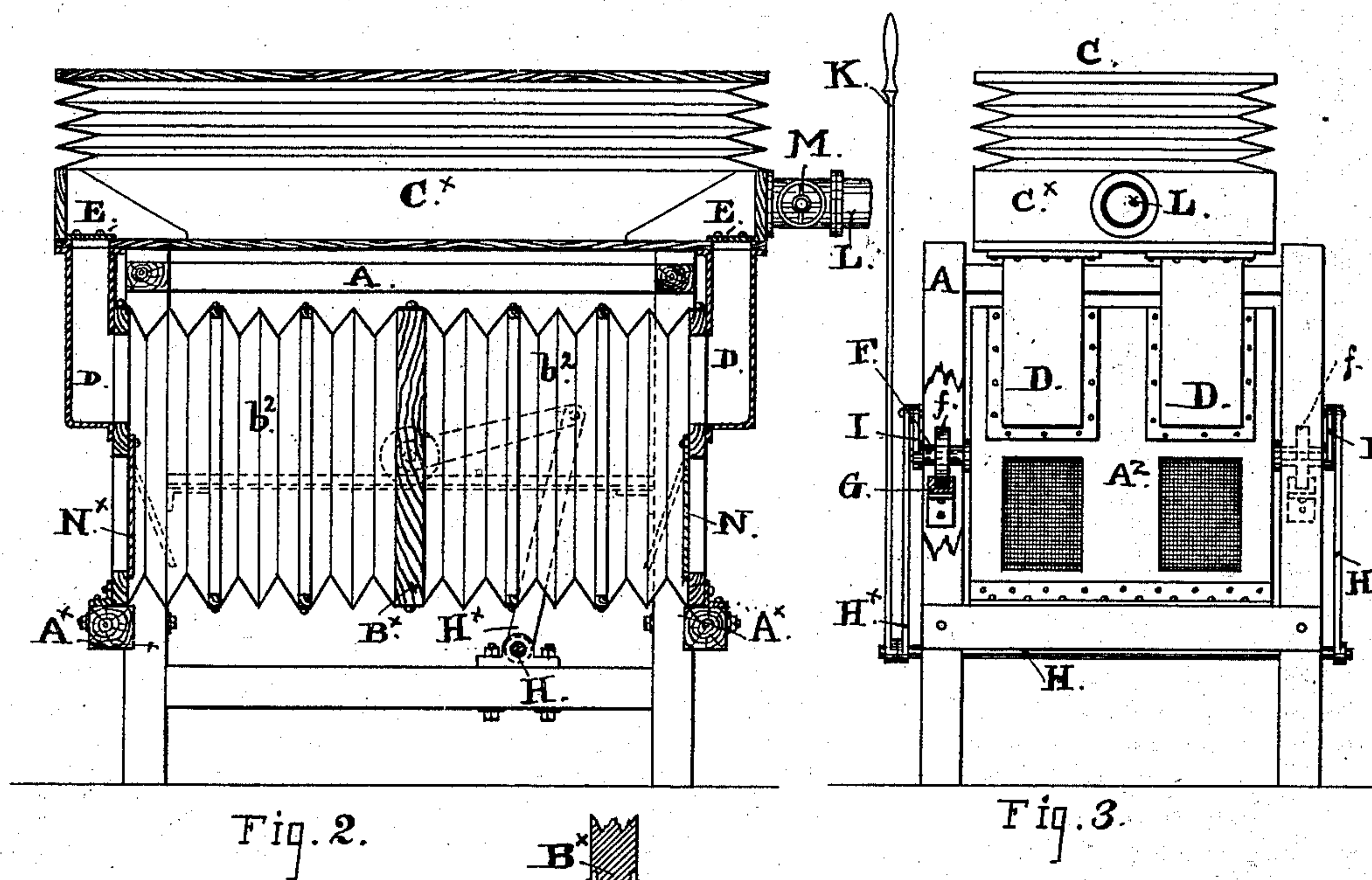
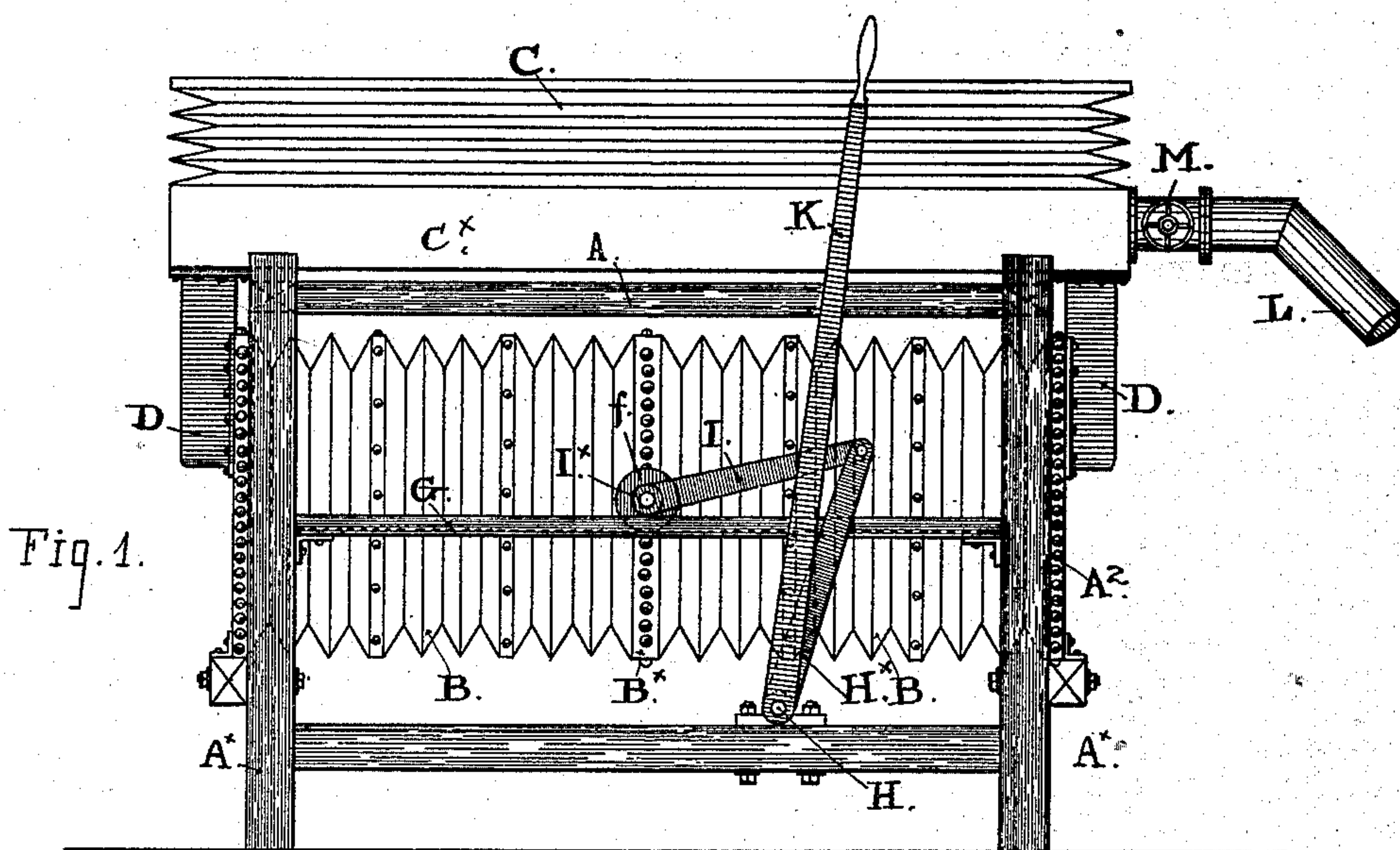


(No Model.)

H. KOHN.
DOUBLE ACTING BELLOWS.

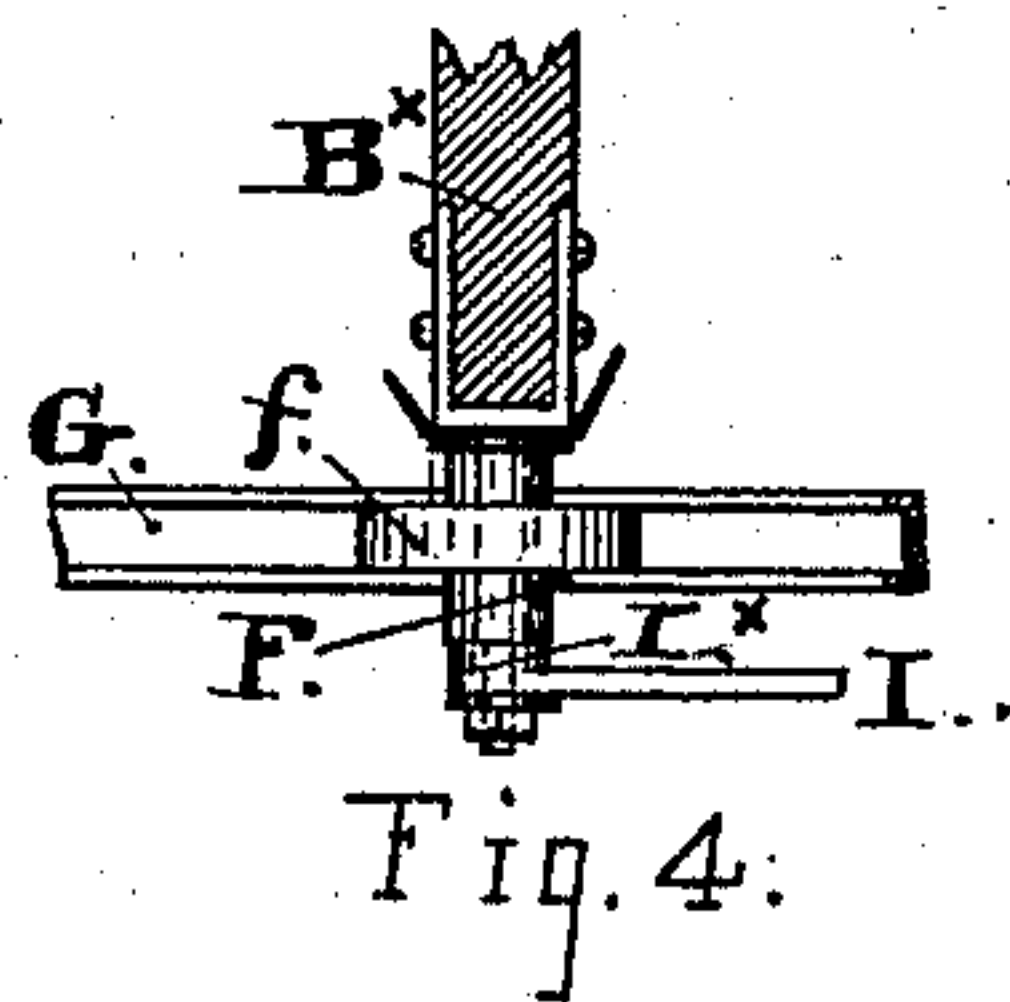
No. 409,980.

Patented Aug. 27, 1889.



Witnesses:

W. Mayer
J. C. Smith



Inventor:

Herman Kohn
B. Smith
his Atty's

UNITED STATES PATENT OFFICE.

HERMAN KOHN, OF SAN FRANCISCO, CALIFORNIA.

DOUBLE-ACTING BELLOWS.

SPECIFICATION forming part of Letters Patent No. 409,980, dated August 27, 1889.

Application filed November 24, 1888. Serial No. 291,809. (No model.)

To all whom it may concern:

Be it known that I, HERMAN KOHN, a subject of the Emperor of Germany, residing in the city and county of San Francisco, and State of California, have invented certain new and useful Improvements in Double-Acting Bellows, of which the following is a specification.

My invention has for its object to produce a double-acting bellows for blacksmiths and other purposes in the arts and trades that shall possess certain features of power, simplicity, durability, and cheapness of construction, as hereinafter fully set forth. This object I accomplish by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of my bellows set up for operation. Fig. 2 is a vertical section taken longitudinally through the parts. Fig. 3 is an end view taken from the right-hand end of Fig. 1. Fig. 4 is a top view in detail of one of the guide-rollers and a portion of the fixed rail on which it travels.

The same letters of reference are used to denote corresponding parts in the several views.

The frame consists of side pieces A and end pieces A^x, within which the main bellows B is fixed, while on the top is arranged an expansible receiving-chamber C, having communication with the bellows B through a passage and aperture D at each end. These lead out at the heads A^x of the frame between which the bellows is set, and contain the upwardly-acting valves E E, arranged to control the inlets into the chamber C above.

The bellows B is of the double-acting kind—that is, it operates to take in air at one side and force air out at the other side at every stroke, so that loss of time during the return-stroke to distend the bellows and take in air is avoided.

In this construction the bellows has a reciprocating head B^x in the center, so mounted and guided in the frame that it maintains a vertical position during its movement and divides the bellows B into two equal parts b² b². At either side of the movable head is fixed a stud F, on which is mounted a wheel or roller f. In line with this wheel on each side of the frame is a horizontal guide-rail G, with a chan-

nel for the wheel to travel in, and beneath the rails on suitable supports furnished by cross-beams A³ at the bottom of the frame a rock-shaft H is set to one side of the center and with a fixed arm H^x on each end. To these two arms are attached by pivot-joints the links I I, which have eyes I^x on the opposite ends to take the studs projecting beyond the rails, so that the links I connect the arms of the rock-shaft.

Through the hand-lever K, at one side, the rollers are caused to travel on the rail from side to side, and the power is applied to both sides of the center-board B^x, producing a smooth even motion and action of the bellows. One compartment of the bellows is thereby compressed and the other distended at each stroke, and the lever K thus acts to force air into the chamber above in either direction of its movement. The passages or trunks D lead out from the fixed heads and enter at the bottom of the box C, which projects beyond the frame at the ends for this purpose, and from this box at one end the conductor L also leads to carry and deliver the air to any point for service. A valve M is provided in this conductor to shut off and to control, as well, the supply of air. Above this box portion the chamber is formed of the expansible section C^x, the two constituting an expansible receiver, that is also capable of operating as an accumulator by suitably weighting the top. The air-inlets N, controlled with suitably-acting valves, are formed in each fixed head of the bellows B, as shown in Figs. 2 and 3. By this construction I produce a powerful as well as a strong and durable bellows, that will be found to work smoothly and furnish an even blast with a comparatively small expenditure of power.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The herein-described bellows, consisting of the two suction and force compartments placed end to end and separated by an imperforate movable partition, the fixed heads having valved inlets for air from the outside, and air-passages controlled by valves to deliver air into a common receiving-chamber, above which said chamber is adapted to form

an expansible receiver, and a rock-shaft provided with an operating-lever connected, substantially as described, to the said partition.

2. The combination, with the double-acting
5 bellows, of the rock-shaft H, provided with the operating-lever K, and having fixed arms H^x H^x, the movable head-board B^x, having the fixed studs F F, which are mounted on wheels or rollers f, the links I, connecting the fixed

arms H^x, and the studs F, and the guide-rails 10 G G, substantially as described.

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

HERMAN KOHN. [L. s.]

Witnesses:

EDWARD E. OSBORN,
OTIS V. SAWYER.