

(No Model.)

2 Sheets—Sheet 1.

J. BALDNER.
SPINDLE AND FLIER.

No. 480,163.

Patented Aug. 2, 1892.

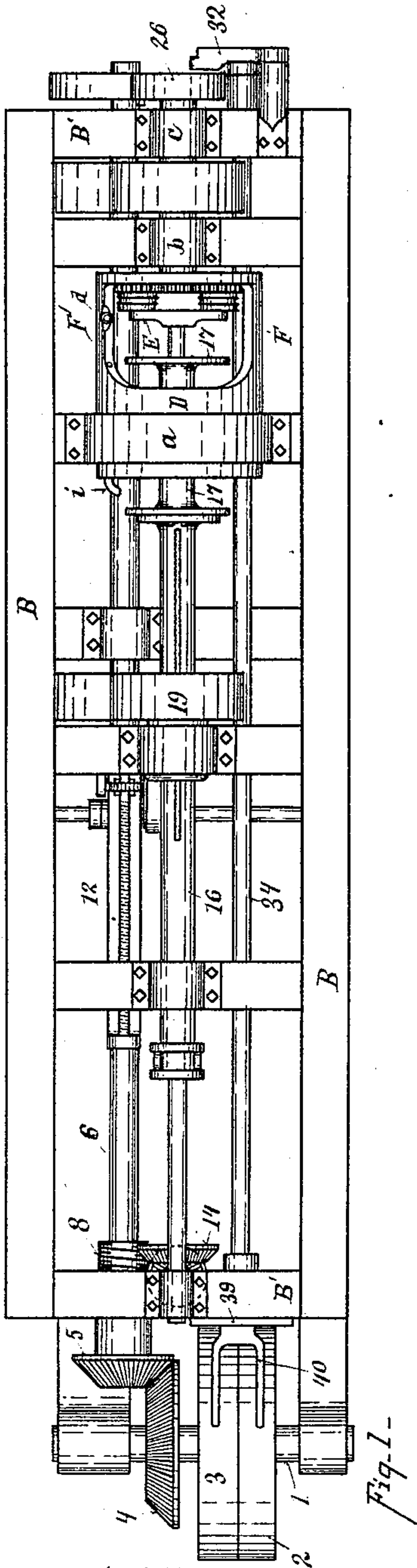


Fig. 1-

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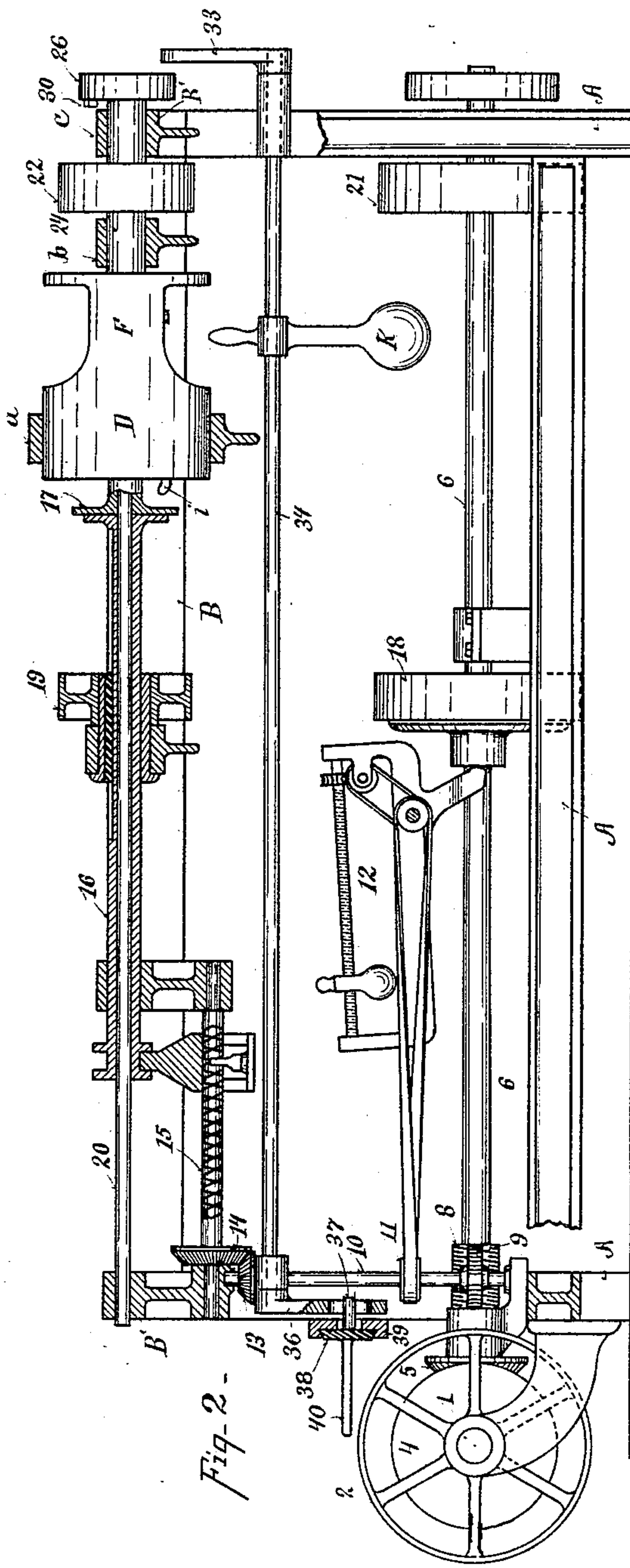


Fig. 2 -

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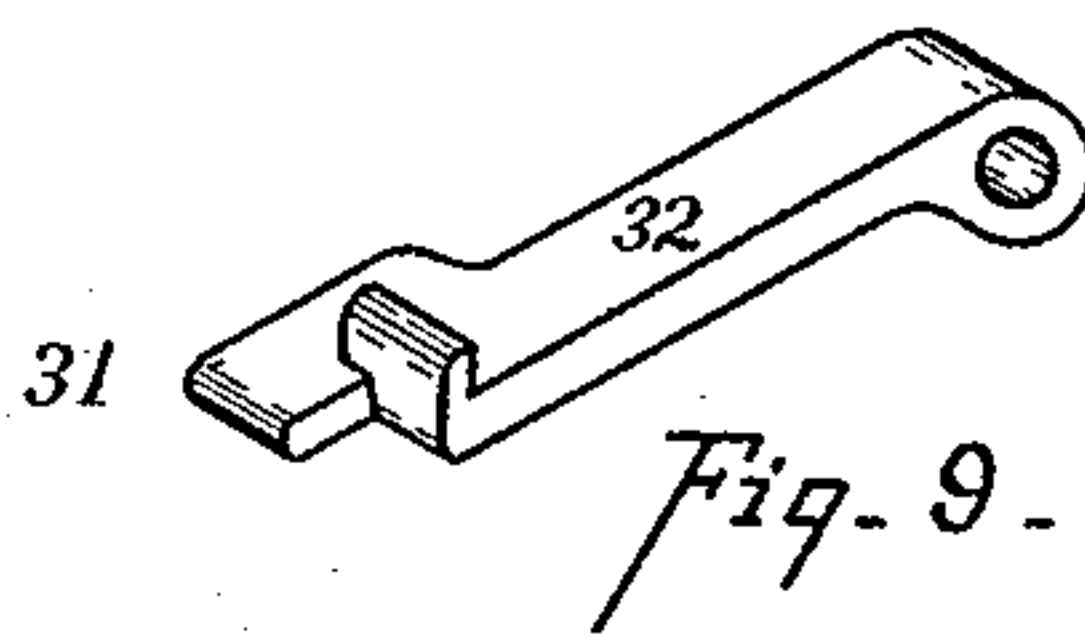
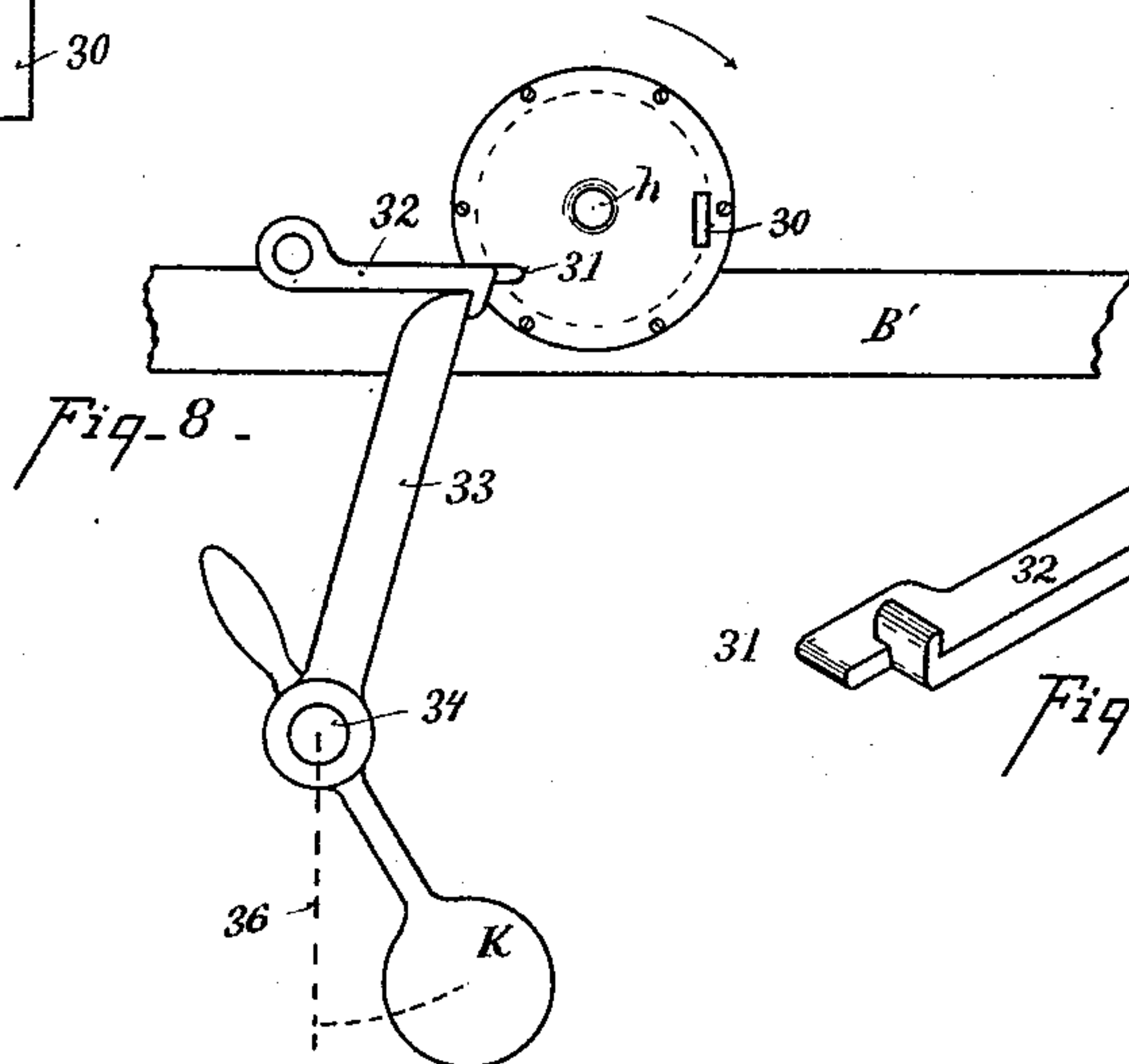
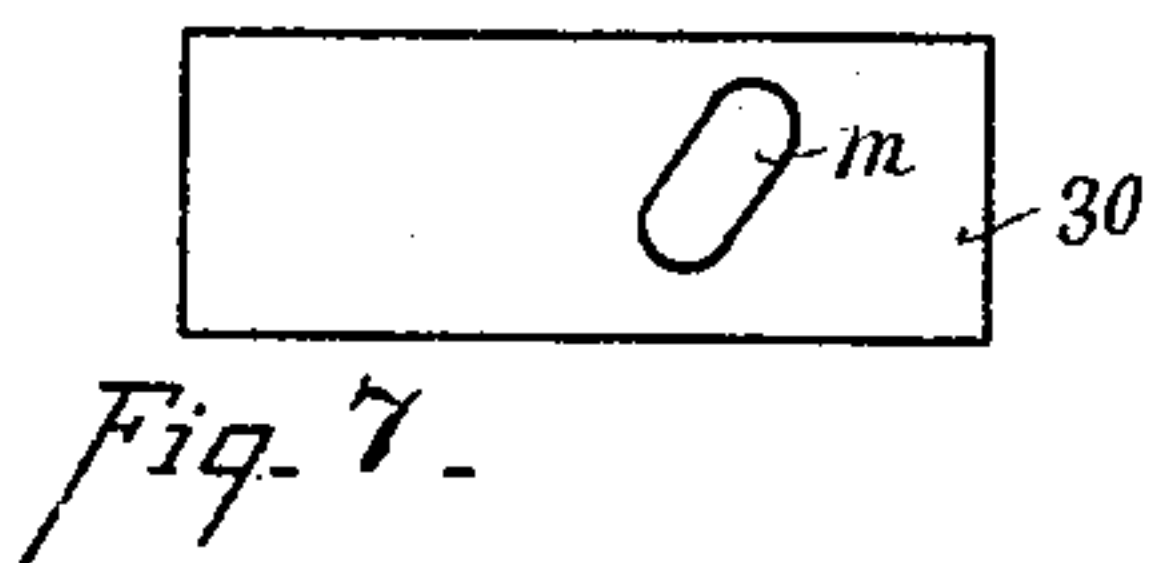
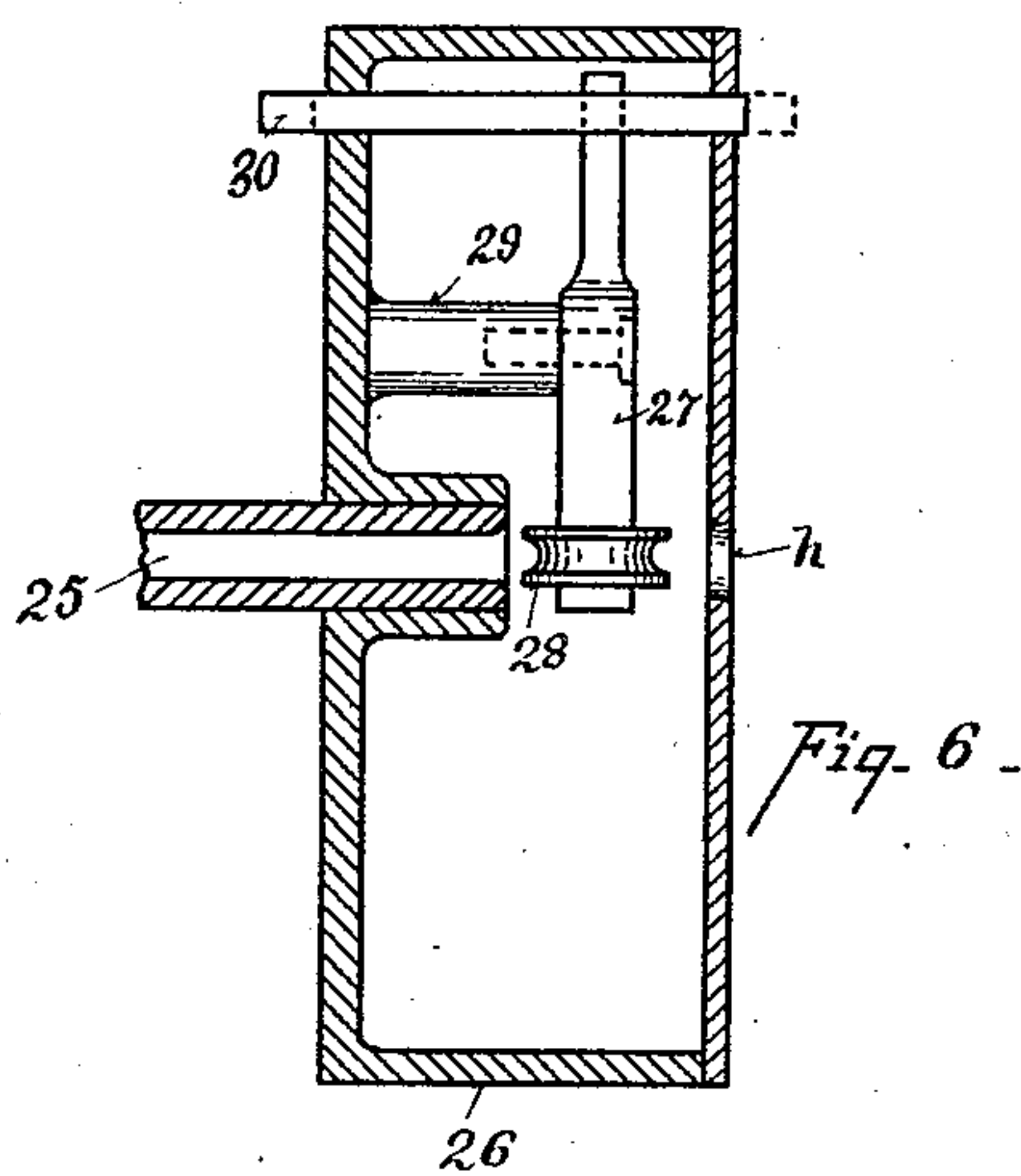
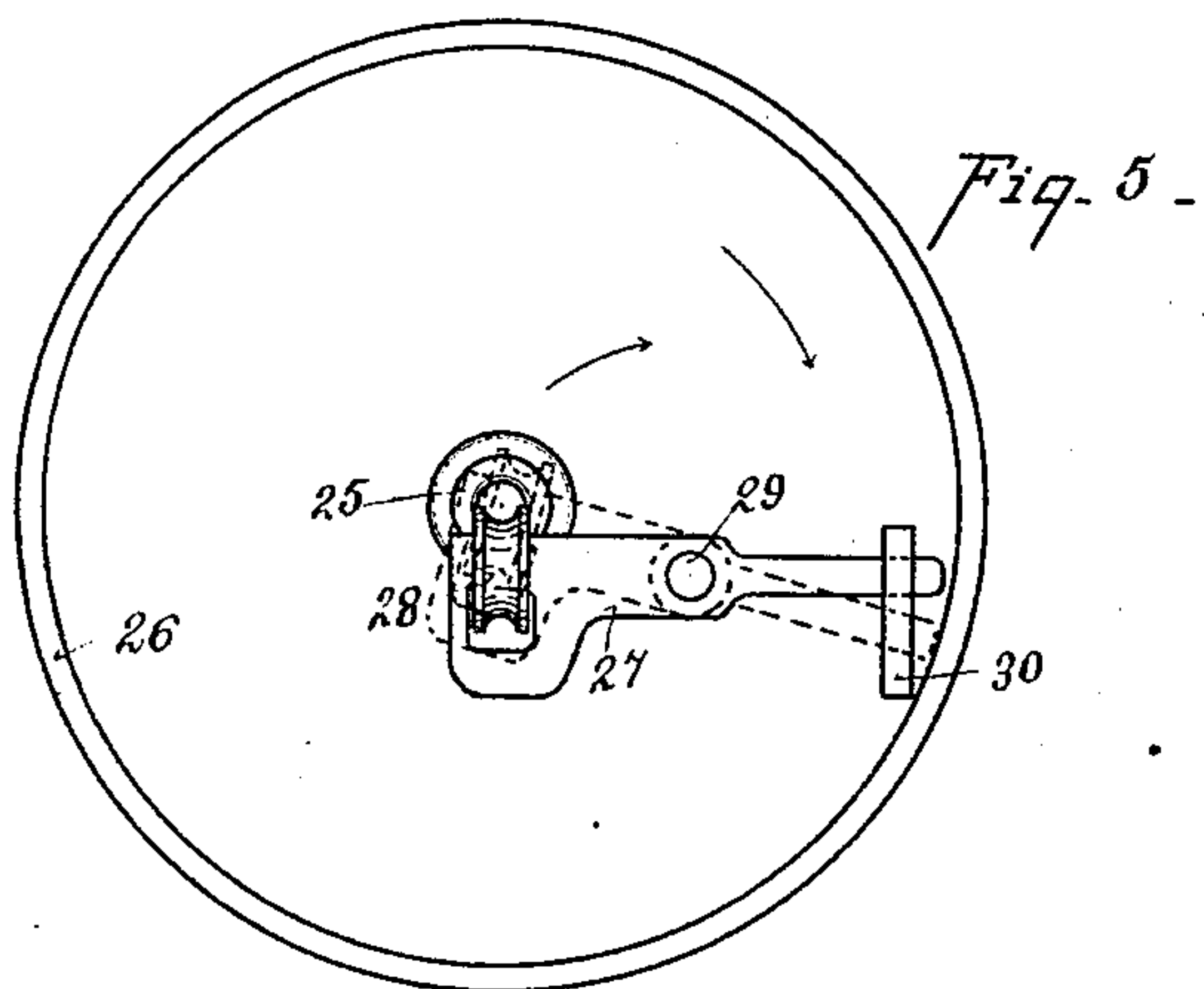
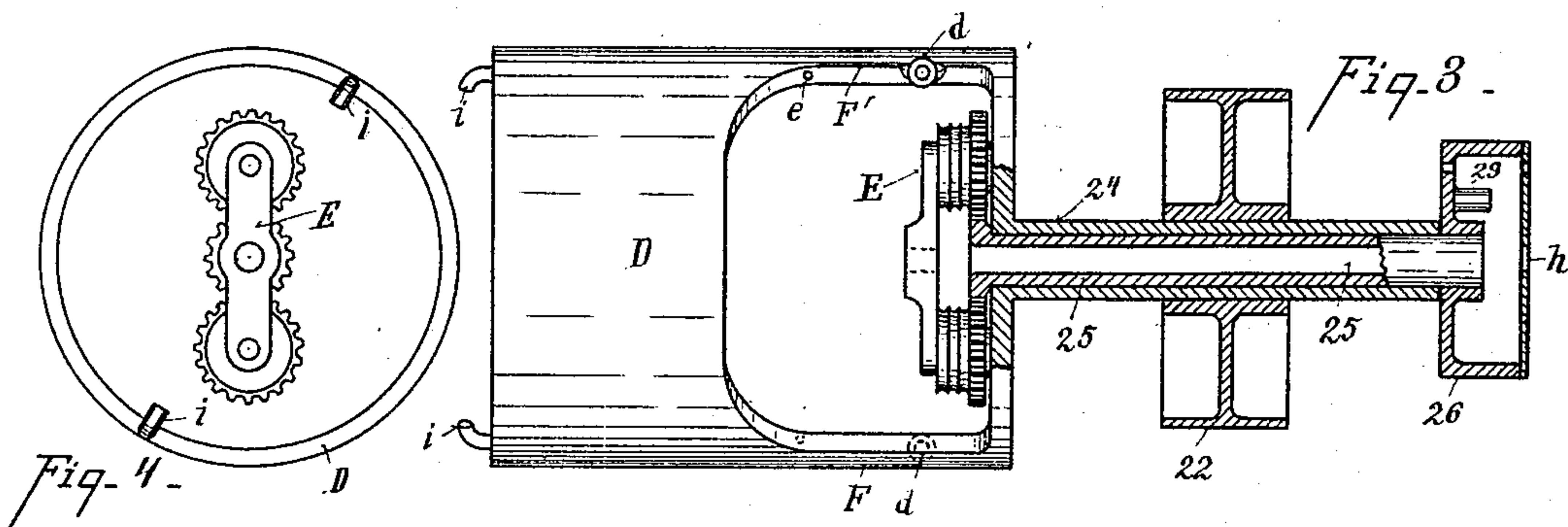
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UNITED STATES PATENT OFFICE.

JACOB BALDNER, OF XENIA, OHIO.

SPINDLE AND FLIER.

SPECIFICATION forming part of Letters Patent No. 480,163, dated August 2, 1892.

Application filed March 22, 1892. Serial No. 425,894. (No model.)

To all whom it may concern:

Be it known that I, JACOB BALDNER, a citizen of the United States, residing at Xenia, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Spindles and Fliers, of which the following is a specification.

My invention relates to a new flier and spindle adapted to spin sisal, manila, hemp, or jute binder twine or rope-yarn.

The object of my invention is to provide suitable unshipping mechanism over which the thread passes, constructed in such manner that when the thread is broken the driving mechanism is unshipped and stopped automatically by the thread breaking.

To this end my invention consists in the novel combination and arrangement of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a top plan view of my improvement in position for use. Fig. 2 is a side elevation of the same, partly in section. Fig. 3 is an enlarged sectional elevation of my improved single-headed flier. Fig. 4 is a front end view of the flier. Fig. 5 is an enlarged front elevation of the capstan-driving pulley. Fig. 6 is a central longitudinal section of Fig. 5. Fig. 7 is a plan view of the latch. Fig. 8 is a detail view of the unshipping mechanism. Fig. 9 is a perspective view of the shipping-catch.

A represents the legs on which the frame of the machine is supported.

A' represents a cross-piece.

B B represent the side bed-pieces of the frame; B' B', the end bed-pieces.

1 represents the main driving-shaft; 2, a loose pulley mounted thereon; 3, a driving-pulley keyed to shaft 1.

4 represents a beveled gear meshing with the beveled gear 5, secured to shaft 6. Upon shaft 6 is mounted a worm 8, which drives the worm-wheel 9 on shaft 10. This shaft 10 transmits motion through pulley 11 to operate the drag mechanism 12. On the end of said shaft 10 is placed the bevel-wheel 13, which meshes with bevel 14 on the right and left screw-shaft 15. This right and left hand screw reverses the reciprocating motion of the traveling sleeve 16, which moves the bob-

bin 17 longitudinally to and from the capstan of the flier. 18 represents a driving-pulley on shaft 6 for driving pulley 19 to revolve the bobbin-sleeve 16. Sleeve 16 journals upon the axial rod 20, and the pulley 19 is splined to the sleeve in the usual manner, so that the sleeve 16 may revolve and still move laterally on its axial rod 20. These parts may be of any well-known form of construction, and my improvements are connected thereto by the following instrumentalities: 21 represents the driving-pulley-transmitting power to pulley 22 for driving the flier-head. The said flier-head, as shown in Fig. 3, is supported upon the sleeve 24 and is constructed as follows: D represents a cylindrical or shell-shaped head. A portion of the metal is cut away opposite the capstan, so as to lighten the same and to permit ready access to the capstan. The forward end of this head is preferably a continuous cylinder, thereby strengthening the parts so that they may be driven at high speed. I have shown three journal-supports, so as to hold this head firmly against tremor. *a* represents the front bearing, in which the cylindrical portion of the head preferably journals.

b represents the central bearing and *c* the opposite bearing for the sleeve-shaft. (See Fig. 2.) Of course only two bearings might be employed to do this; but for a very high speed machine three bearings are preferable.

E represents the capstan, which is of usual construction.

F F' represent the segments connecting the disk of the head to the cylindrical portion.

d represents friction-pulleys, over which the thread passes from the capstan to the bobbin.

e represents an aperture leading through the cylinder and communicating with a similar passage through the horn *i*. There are two of these passages and horns simply for convenience, so that either side may be used, as convenient. 25 represents the hollow capstan-shaft, which journals in sleeve 24. It is driven by pulley 26. This is a hollow shaft of the usual pattern, through which the thread passes to be twisted. The thread is fed through the axial aperture *h* of the pulley. This pulley is shown with its front disk continuous; but it may be made with portions of it cut away, if desired.

In order to unship the driving mechanism,

I have provided the following devices for automatically operating a belt-shifter by the breaking of the thread.

27 represents a rocking arm upon which is journaled a friction-roller 28, opposite the opening in the hollow shaft 25. This arm is journaled upon the stud 29.

30 represents a latch which is provided with an inclined slot *m*, in which the shank of the arm 27 rests. As the arm 27 is rocked up and down it moves the slide to and fro within and upon the disk-face of the pulley, as shown in dotted lines, Fig. 6. When this slide is in its forward position, as shown in dotted lines, Fig. 6, and in full lines, Fig. 8, it is in position to engage with the lug 31 of the catch 32, which catch is journaled to the frame-piece B'. Said catch engages with the rock-arm 33, mounted upon the rock-shaft 34.

K represents a weighted lever attached to the rock-shaft 34, so as to hold it normally in vertical position. (Shown in dotted lines 36, Fig. 8.) When in engagement with the catch 32, however, it is held in position shown in full lines. The rocker-arm 27 is held down by the tension of the thread which holds the shank of the said arm in the upper portion of the slot, holding the latch 30 retracted and out of engagement with the lug 31 of the catch 32. As soon as the thread breaks the strain of the thread is removed and the rocker-arm 27 is thrown into the position shown by dotted lines in Fig. 5 by the centrifugal force of the driving-pulley. This centrifugal force moves the latch 30 forward, projecting it through the disk of the pulley 26, and as it revolves brings it into engagement with the lug 31 of the catch 32 and lifts it out of engagement with the arm 33 of rock-shaft 34. The weight immediately drops, and this dropping of the weight rocks the shaft 34. Upon the front end of this shaft is mounted a crank-arm 36, which engages with the pin 37, pro-

jecting from a slide 38, which slide moves in ways 39 and carries the shifting-forks 40, by which the belt is moved from the loose pulley 2 to the driving-pulley 3, and vice versa. The weight and rock-shaft are so arranged that the weight normally holds the belts on the loose pulley 2.

When it is desired to start the machine in operation, the operator lifts the weighted arm 35 and brings the arm 33 into engagement with the catch 32. When the machine is threaded, it will be stopped automatically by the breaking of the thread or by the disengagement of the catch 32 by the operator. The slide 30 may be moved by a brake or any other automatic device to accomplish this result.

Having described my invention, what I claim is—

1. The combination, with a capstan provided with a sleeve-shaft and a driving-pulley, of a rocker-arm pivoted to said pulley, a friction-pulley mounted in said rocker-arm and arranged opposite the opening in the sleeve-shaft of the capstan, said rocker-arm pivoted to turn inwardly by centrifugal force, and unshipping mechanism operated by the movement of said rocker-arm, substantially as described.

2. The combination, with the driving-pulley 26, of the rocker-arm 29, carried within said pulley, the unshipping mechanism operated thereby, consisting of the latch 30, catch 32, the rock-shaft 34, and the rocker-arm 33, and the belt-shifting mechanism connected to and operated by the movement of said rock-shaft 34, substantially as described.

In testimony whereof I have hereunto set my hand.

JACOB BALDNER.

Witnesses:

F. N. SHAFFER,
CHARLES DENBEIGH.