

J. McD. GAMEWELL & J. A. KIRBY.

HYDRAULIC PRESS.

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966,191.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

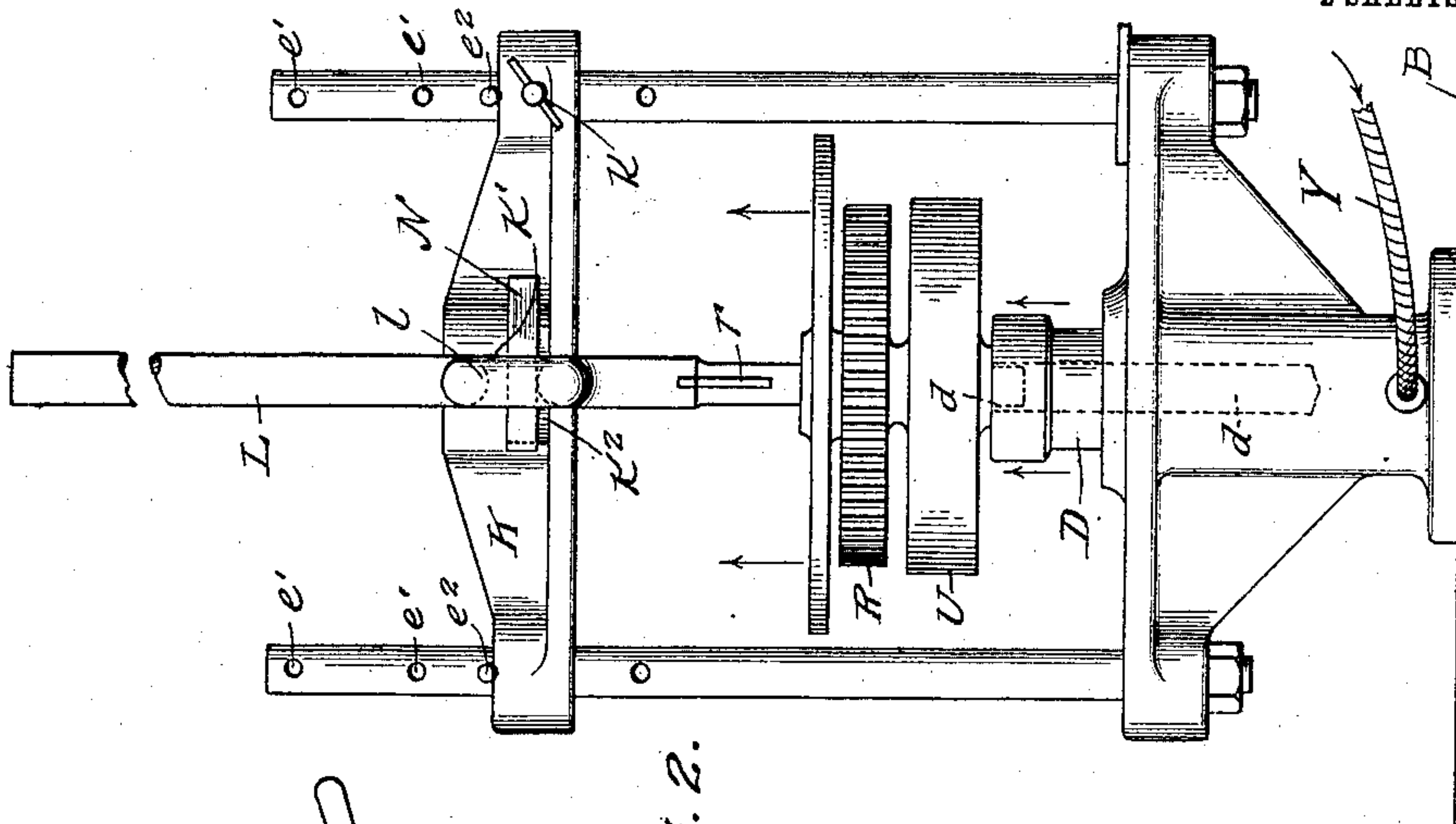


Fig. 2.

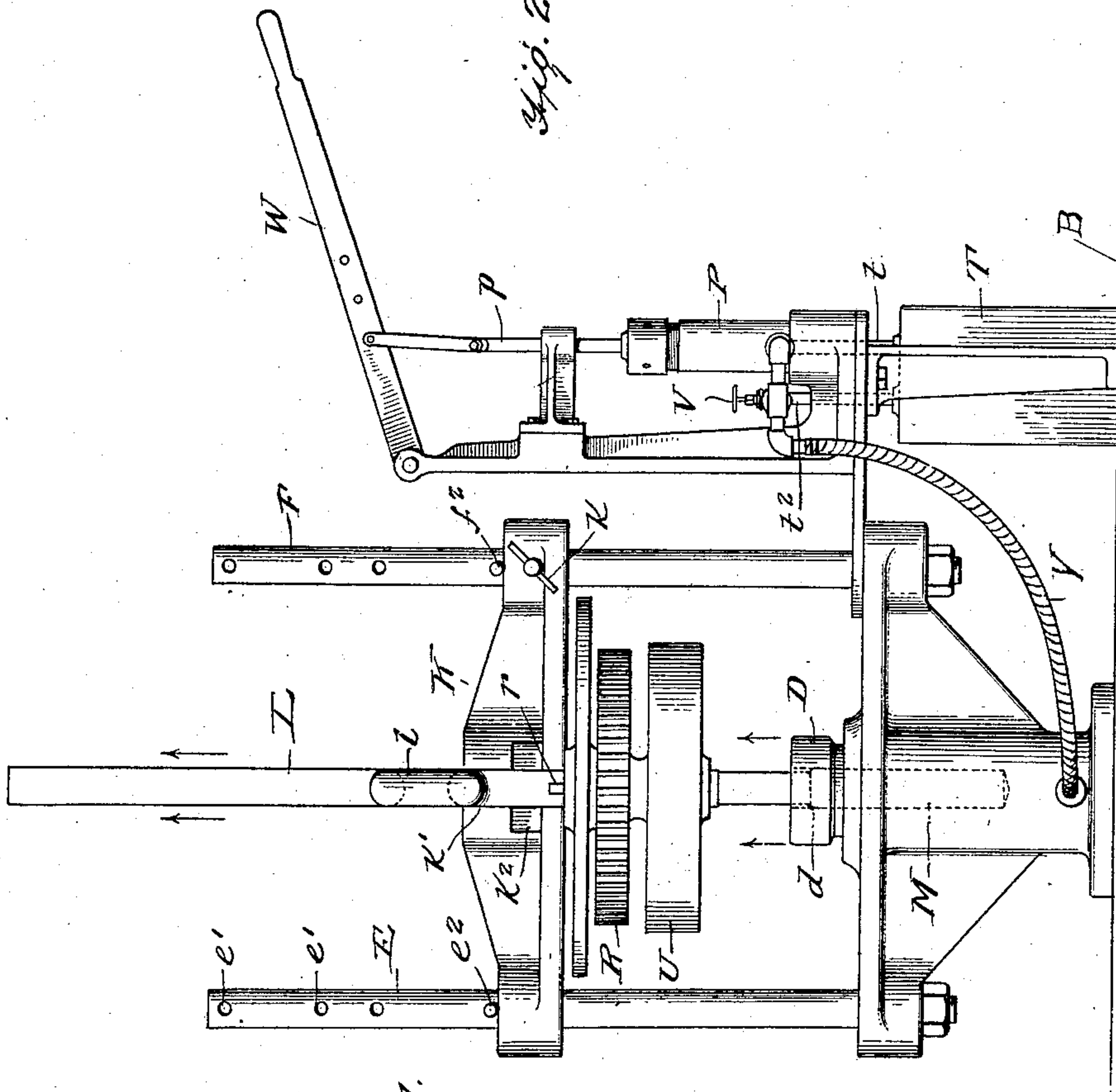


Fig. 1.

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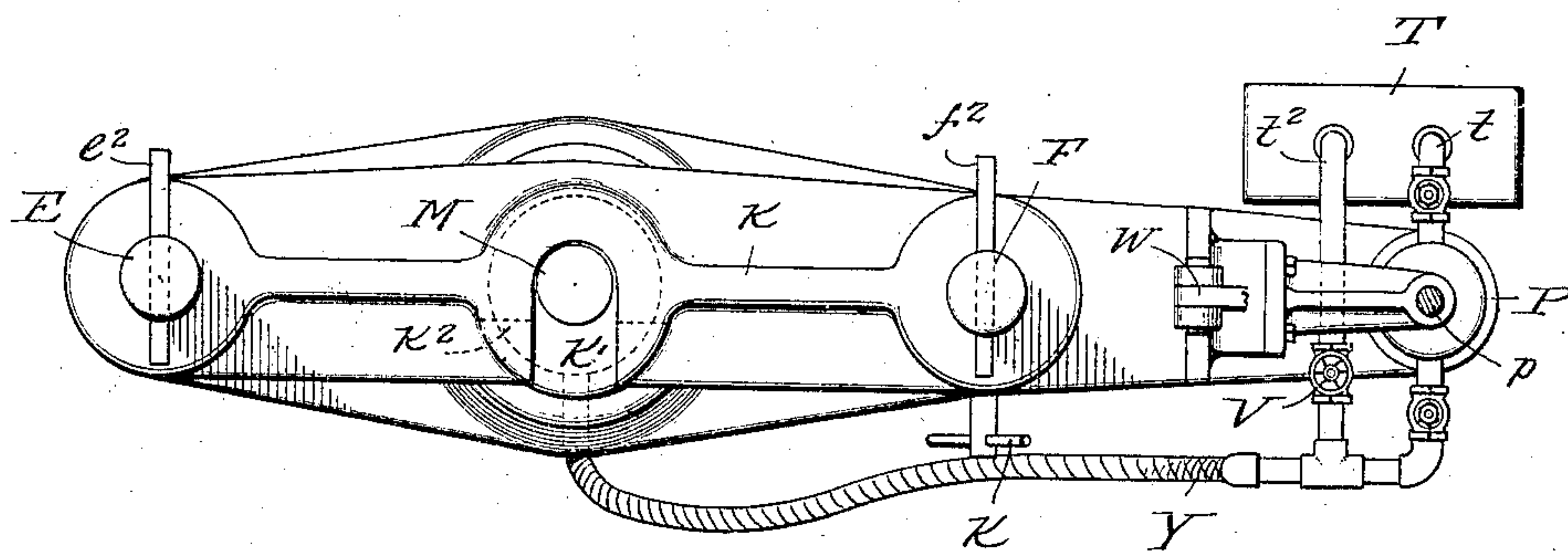
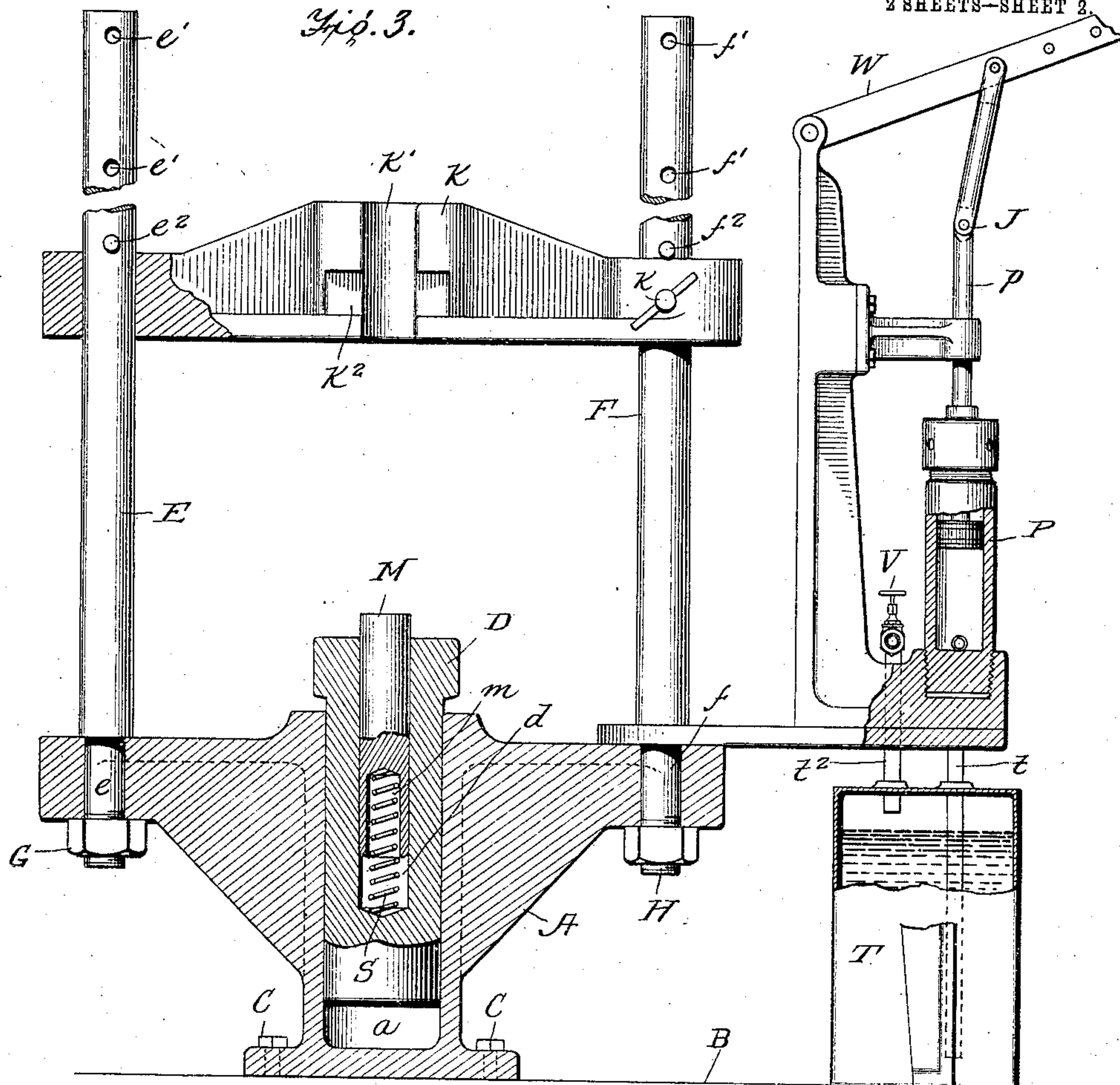
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UNITED STATES PATENT OFFICE.

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HYDRAULIC PRESS.

966,191.

Specification of Letters Patent.

Patented Aug. 2, 1910.

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To all whom it may concern:

Be it known that we, JOSEPH M. GAMEWELL and JAMES A. KIRBY, citizens of the United States, and residents of Spartanburg, in the county of Spartanburg and State of South Carolina, have invented certain new and useful Improvements in Hydraulic Presses, of which the following is a specification.

Our invention relates to improvements in hydraulic presses, and it consists in the combinations, constructions and arrangements herein described and claimed.

The object of our invention is to provide a device which is intended to be used primarily for forcing off gears and pulleys from broken or defective loom crank shafts, in cotton or woolen manufacturing plants, and for forcing the same on to a new shaft.

A further object of our invention is to provide a press in which certain parts are arranged to receive the crank shaft and other parts to bear against the gears or pulleys to be placed on the shaft or to be removed.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

Our invention is illustrated in the accompanying drawings forming part of this specification in which:

Figure 1 is a side view of the device showing it in position for forcing off a gear and pulley from a shaft; Fig. 2 is a similar view showing the device in position for forcing a pulley and gear on the shaft; Fig. 3 is a central vertical section through the device, and Fig. 4 is a plan view of the device.

In carrying out our invention, we provide a base A which is designed to rest upon the floor B, being secured thereto by means of the bolts C. This base A is cored out at a to provide a cylinder for the piston D.

Secured to the base are the uprights E and F. The former has a reduced portion e which passes through a portion of the base and which is secured by means of the nut G. The support F has a similar reduced portion f which is secured by means of the nut H. A heavy casting K is adjustably secured upon the uprights E and F by means of a set screw k . The uprights E and F are provided with holes e' and f' at intervals, into which pins e^2 and f^2 may be placed for hold-

ing the casting against the great pressure exerted by the piston. The piston is cored out for a portion of its length, as shown at d , to receive a pin or plunger M. The latter is also cored out at its lower end m to receive the spiral spring S.

The pump is shown at P. The plunger rod p of the pump is provided with a swivel joint J and is pivotally attached to the handle W.

T is an oil tank which is connected with the pump by a pipe t . The pump, in turn, is connected with the cylinder a by means of a tube or flexible connection Y. A branch pipe t^2 leads from the pipe Y into the tank T, and is controlled by a valve V.

From the foregoing description of the various parts of the device, the operation thereof will be readily understood.

In Fig. 1 the end of a crank shaft L bearing a gear R and a pulley U is placed in the opening d in the piston D, the pin M being forced down against the spring S. The upper end of the shaft L extends through a recess k' in the casting K. The latter is brought down next to the gear R and is held in place by the pins e^2 and f^2 . Now, when the handle W is operated, the oil is forced through the pipe Y into the cylinder a . The pressure of the piston forces the shaft L upwardly until the gear and pulley are free of the key r , when they may be removed. Now, by turning the valve V, the oil is forced back by the weight of the piston and the shaft and the gears may be removed.

Fig. 2 shows the position of the parts when the gear and pulley are to be replaced. The pin M is first removed from the piston D. The spring S normally keeps the end of the pin projecting above the top of the piston as shown in Fig. 3, so as to facilitate its ready removal, the spring being compressed within the bore m when the pin is forced downwardly. The end of the shaft is placed as before, in the cored end of the piston D, the gear and the pulley having been placed on the shaft, the latter in contact with the piston D. A steel key N is inserted through a crank l of the shaft L under the shoulder of a recess k^2 in the casting K. This prevents the upward movement of the shaft. Now, as the piston moves upwardly, the bottom of the shaft enters the bore d , while the gear and the pulley are forced into place, the key r being placed in

position and the pulley and gear being turned so that their key ways will register with the key.

The device, as described, may be also used
5 for forcing the joints of steel rollers together when the latter have been broken and repaired, in place of driving the tight fitting male and female parts together by hand with a hammer, as in the ordinary manner.
10 It will be seen that the construction described above is very simple. One of the important features of this device is that the standards or uprights E and F, together with the casting K may be entirely removed
15 by merely unloosening the nuts G and H. The device may then be used as an engine jack. On replacing the uprights on the casting and securing the nuts the machine is ready again for use as a means of forcing
20 gears off or on shafts. It is in the simplicity of the machine that the merit largely lies, the device having few parts as stated above.

We are aware that other forms of the device based upon the same general principles
25 might be made, but we consider as our own all such modifications as fairly fall within the spirit and scope of the invention.

We claim:

1. In a hydraulic press, a base provided
30 with a bore, uprights removably secured upon said base, a piston provided with a bore arranged to reciprocate in the bore of said base, a spring actuated plunger disposed in the bore in said piston, the top of
35 said plunger being kept normally above the

top of the piston by the actuating spring and an adjustable casting secured to said uprights and provided with a recess in alignment with the bore in said piston.

2. In a hydraulic press, a base provided 40 with a bore, uprights secured upon said base, a piston provided with a bore arranged to reciprocate in the bore of said base, a plunger disposed in the bore in said piston and provided with a recess, a spring having 45 one end disposed in a recess in said plunger and the other end extending into the bore in said piston, a casting provided with a recess in line with the bore in said piston, and having a shoulder, and pins adapted to be 50 secured to said uprights for retaining said casting in position against the force exerted by said piston.

3. In a hydraulic press, a base provided with a bore, a pair of removable uprights 55 carried by said base, said uprights having reduced portions adapted to enter said base, nuts for securing the uprights to the base, a piston adapted to reciprocate in the bore of said base, a casting adjustably secured to 60 said uprights above said base and provided with a recess in alignment with the bore in said base and having a second recess transverse of said first named recess, and a pin adapted to enter said second recess.

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Witnesses:

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