

B. & J. BRETT.
 DROP HAMMER.
 APPLICATION FILED MAR. 8, 1910.

975,206.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

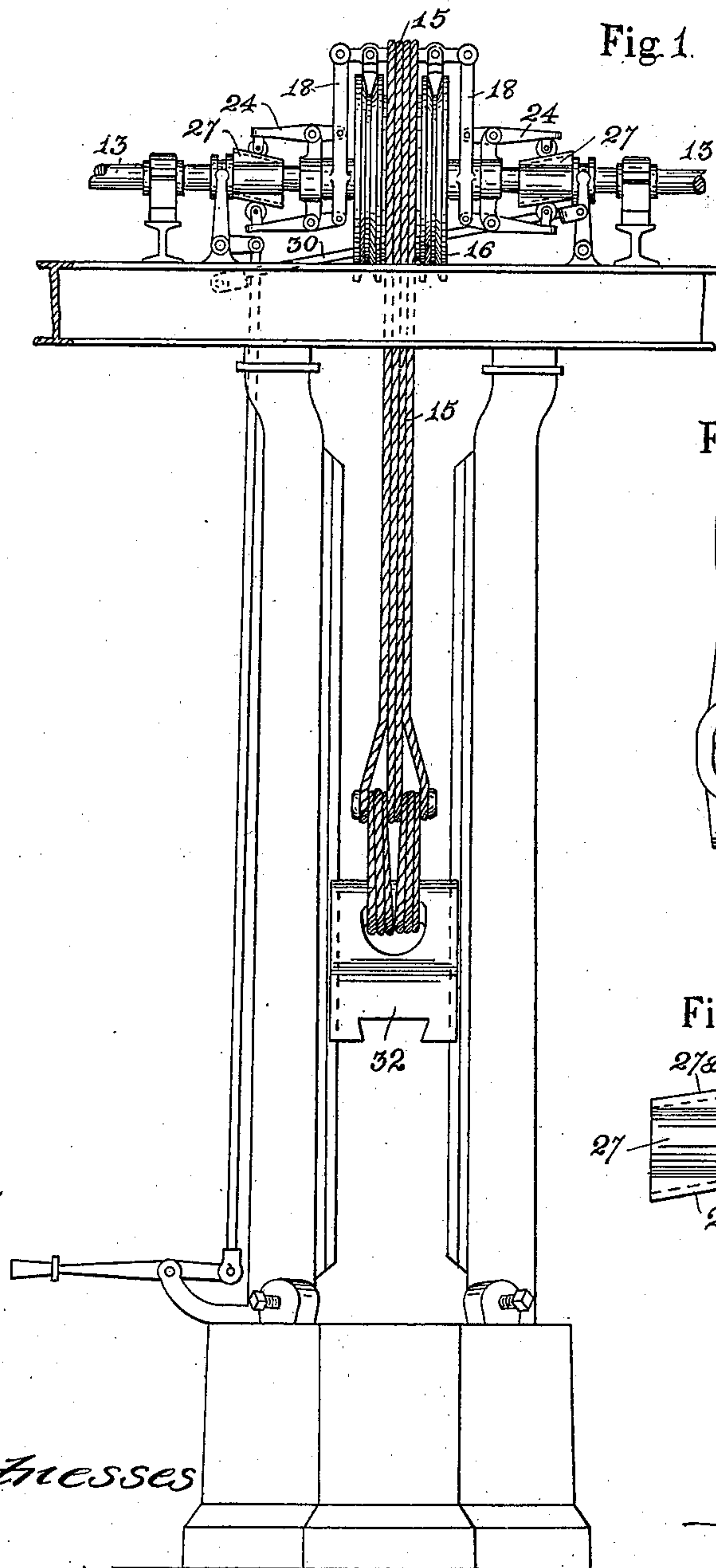


Fig 1.

Fig 5.

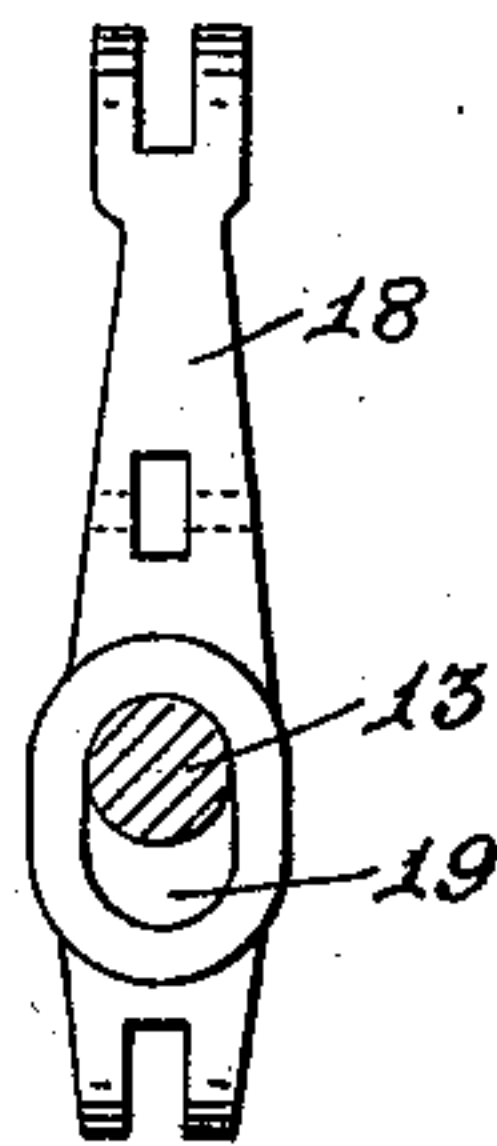


Fig 6.

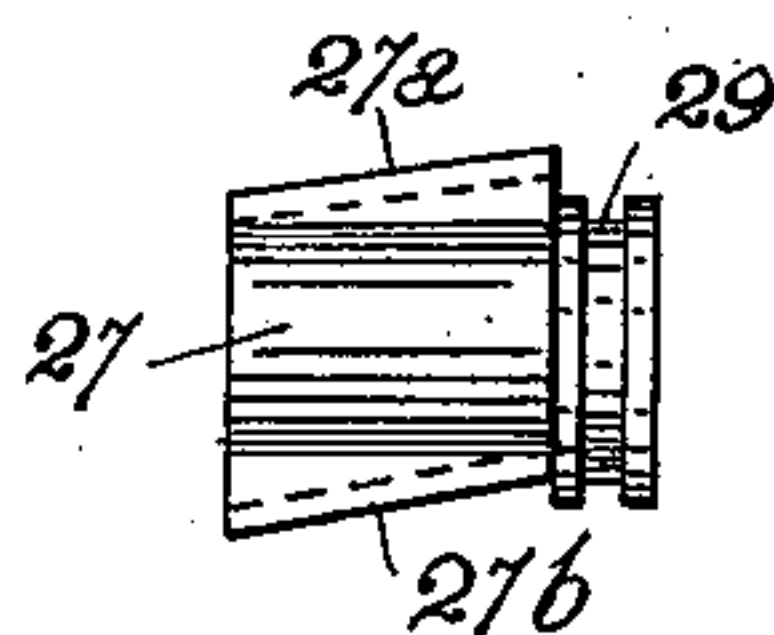
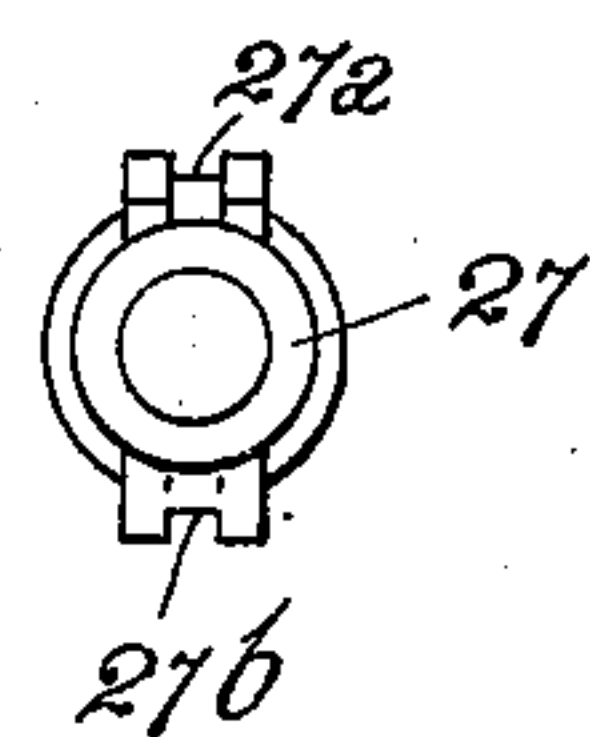


Fig 7.



Witnesses

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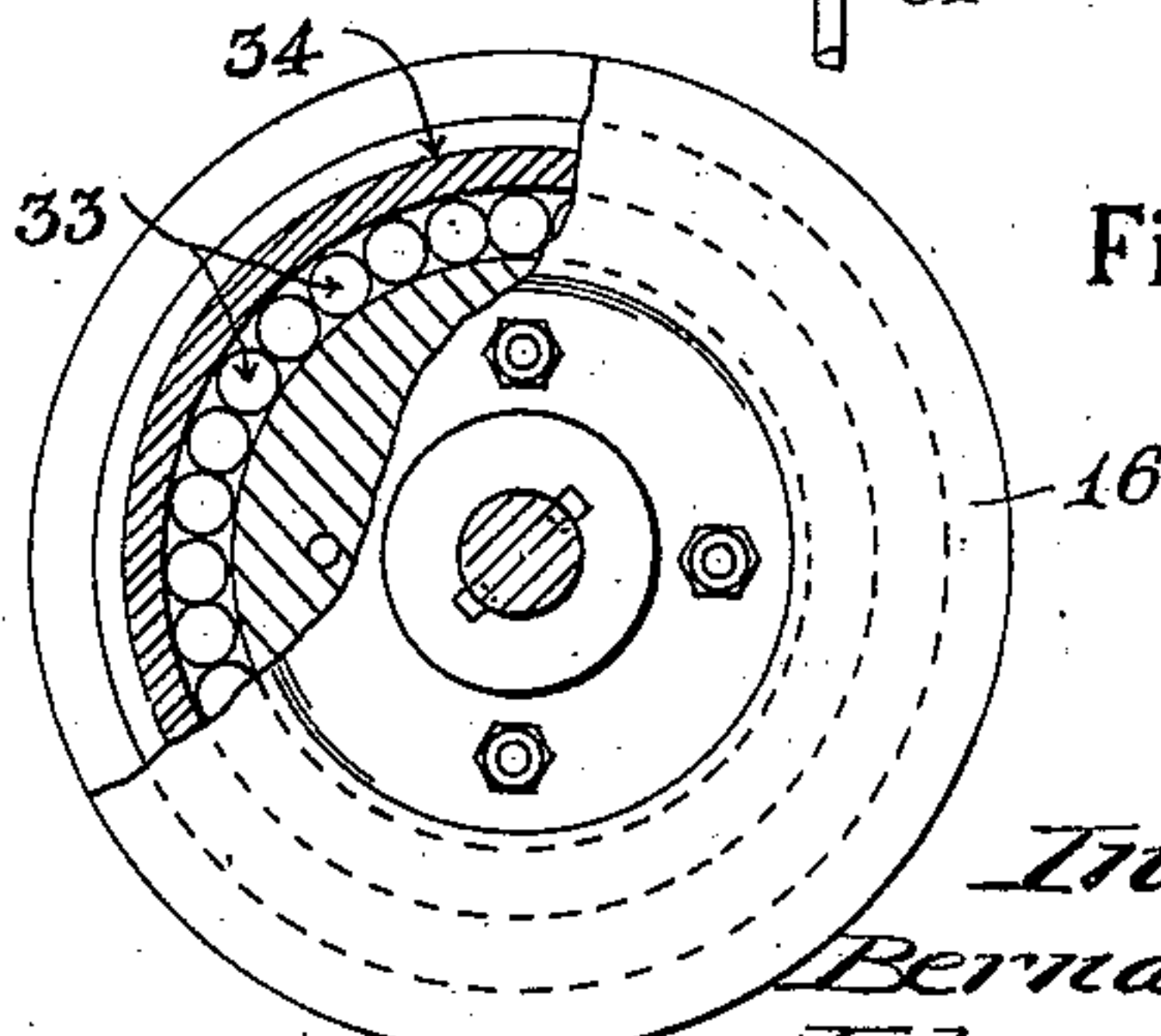
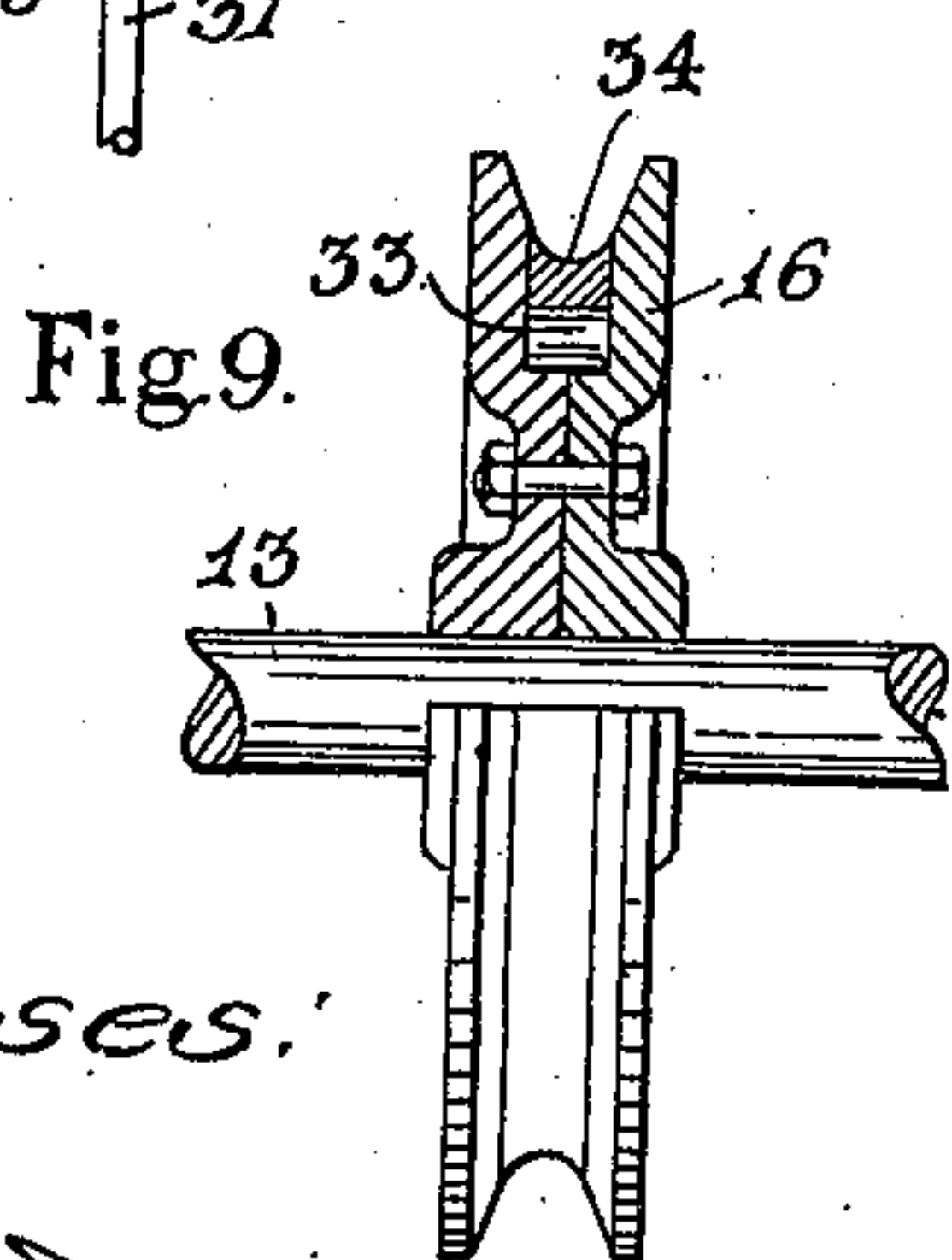
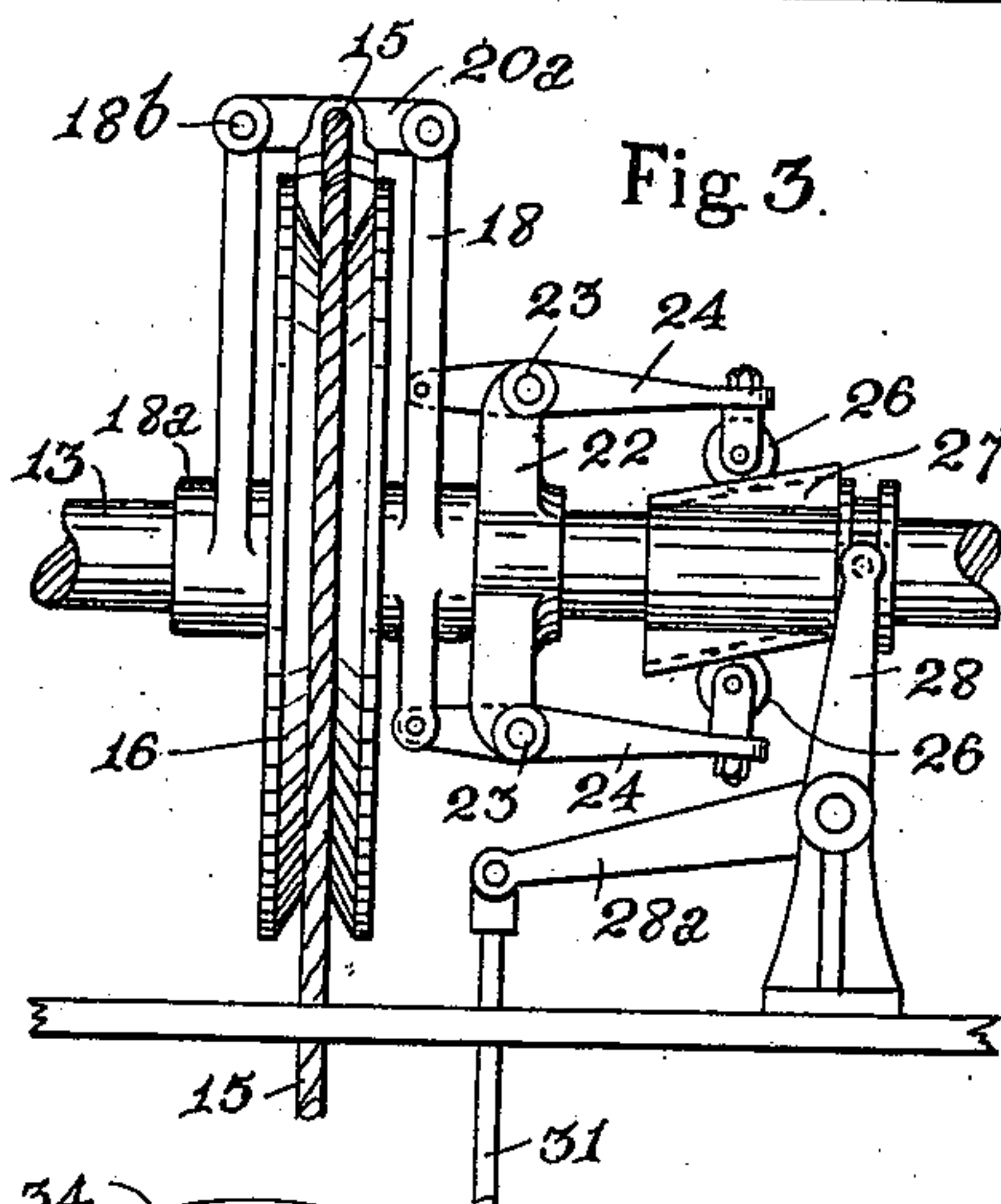
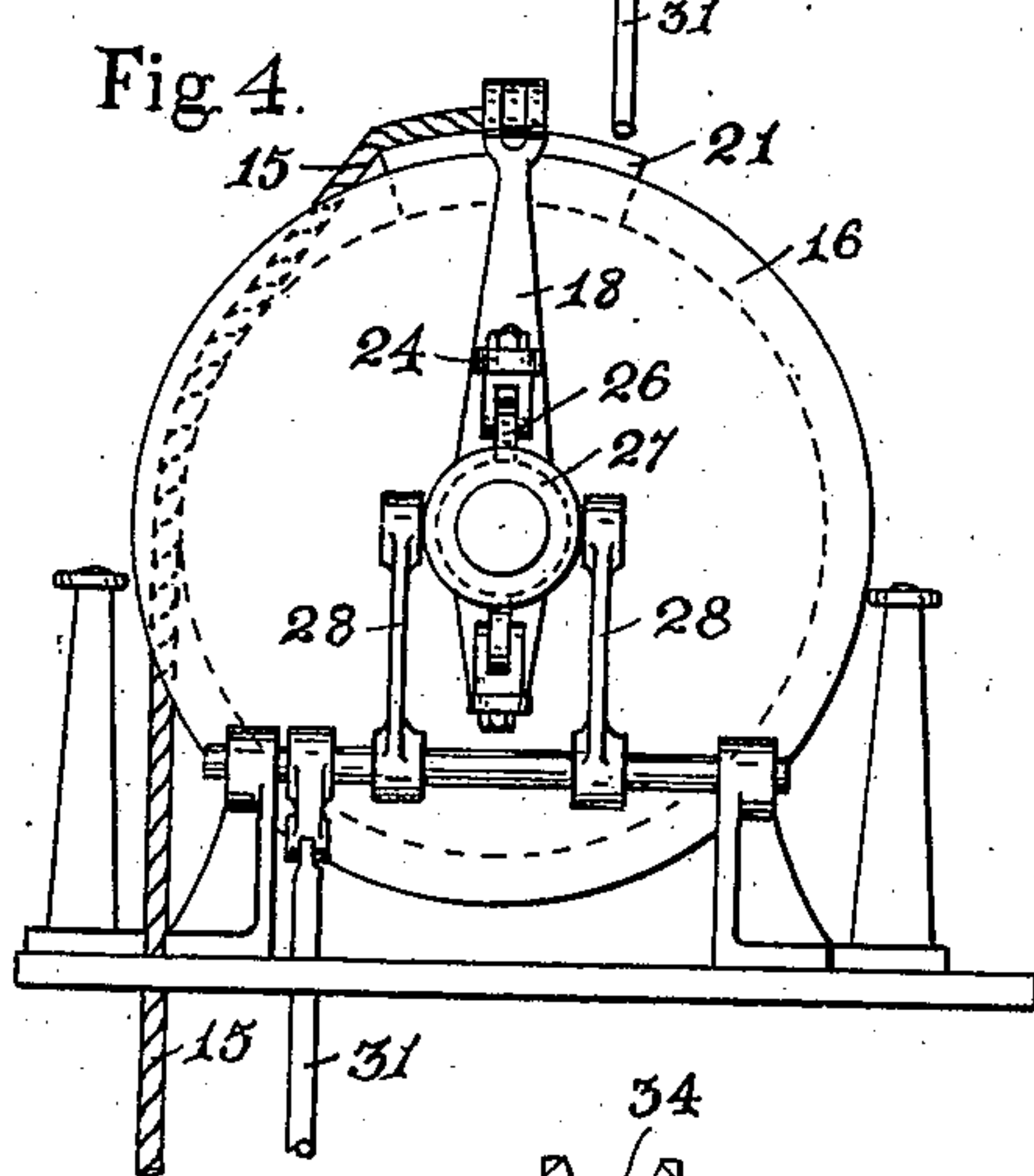
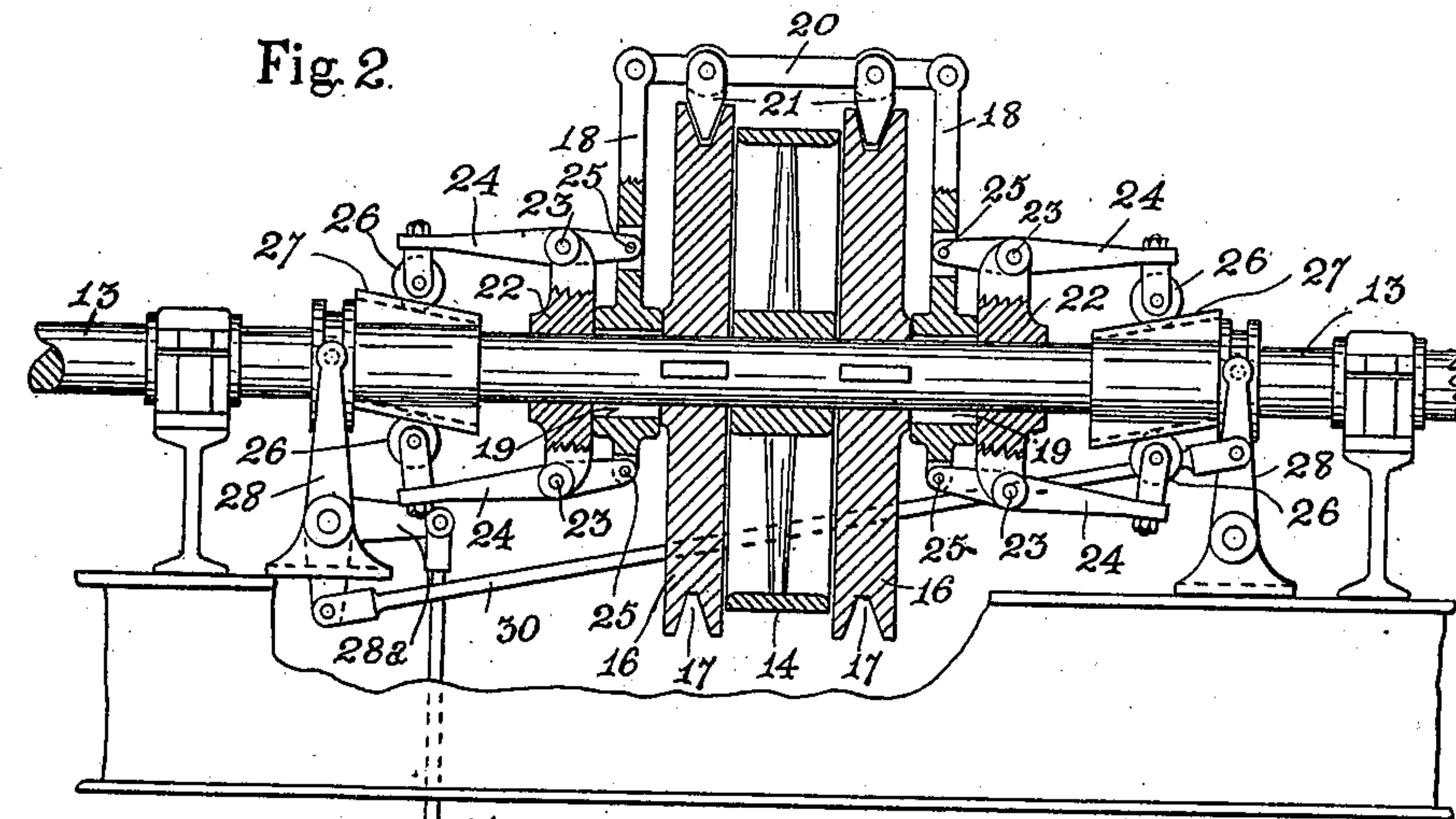
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

BERNARD BRETT AND JOHN BRETT, OF COVENTRY, ENGLAND.

DROP-HAMMER.

975,206.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed March 8, 1910. Serial No. 548,068.

To all whom it may concern:

Be it known that we, BERNARD BRETT and JOHN BRETT, subjects of the King of Great Britain, residing at 7 Barr's Hill, Coventry, Warwickshire, England, have invented certain new and useful Improvements in Drop-Hammers, of which the following is a specification.

This invention relates to improvements in drop hammers, and has reference to the lifting mechanism of such hammers, by which a much more certain and sensitive action is obtained than hitherto.

Briefly, our invention consists of a novel form and arrangement of friction lifting pulleys and friction block arms, which are actuated by an improved lever device. Such an arrangement may be of a double or single character, that is to say, for hammers of a heavy kind the double type may be used, while for lighter hammers, the single type are sufficient.

In order to more clearly explain this our invention we have appended hereunto illustrative sheets of drawings, upon which are figures and numbers of reference, similar numbers referring throughout the several views to the same thing or part, and in which:—

Figure 1 is a front view in elevation of a drop hammer constructed according to this our invention, and showing the clutch like mechanism as of the multiple or "double driven" type. Fig. 2 is an enlarged sectional view of the invention. Fig. 3 is a front view, and Fig. 4 an end view of the mechanism as arranged for the "single" clutch form. Figs. 5 to 9 inclusive show details and modifications of the mechanism.

Referring now more particularly to Figs. 1 and 2, the shaft 13 is driven by any suitable means in a continuously running manner. Upon this shaft is mounted the idle pulley 14 which supports the lifting rope or band 15. 16, 16, are pulleys which are placed one on each side of the free revoluble or idle pulley 14, and which are keyed to the shaft 13. In the periphery of these pulleys is formed the somewhat V shaped groove 17. 18, 18, are the lifting arms which are made slidable in a radial direction, that is to say, their outer ends are capable of being moved nearer to or farther from the center of the shaft 13. The means of permitting this movement may be varied, but that shown consists of an oblong hole 19 being formed in

the arm (see Fig. 5) which slidingly fits the shaft 13. The two outer ends of these radial arms 18, 18, are connected together by the cross rod 20. To the center of this cross rod the end of the lifting rope or band 15 is secured, and upon each side of the same the friction blocks 21 are rigidly secured, which agree with and fit the grooves 17 in the pulleys 16. Upon the bosses 22 are formed the fulcrum joints 23 to accommodate the levers 24, whose one end is connected to the arms 18 at 25, above and below the shaft 13. The other end of these levers 24, is fitted with a roller 26 which is acted upon by the slidable cam block 27, which latter is mounted freely on the shaft. These blocks are formed with oppositely located tapered or inclined surfaces 27^a and 27^b which are disposed parallel with each other. These blocks are slidingly operated by means of the forked levers 28, whose one end (or a roller thereon) engages in the usual manner with the circumferential groove 29 in the block 27. These fork levers are further connected to each other by the connecting rod 30, so as to act simultaneously, and again further connected to the primary operating rod 31 by means of the short arm 28^a. The rod 31 is carried to any convenient position, or form, for the operator. Its action will therefore be understood as follows:—As shown in Fig. 2 the blocks 21 are held free of the grooves 17 and therefore the arms 18 are stationary. When however the rod 31 is drawn downward, the cam blocks 27 are forced inward, and in so doing the arms 18 are drawn downward so that the blocks 21 are wedged sufficiently tight into the grooves of the revolving pulleys 16, as to cause them to forcibly carry with them the said blocks 21, and together with them the rope or band 15, and thus to raise the hammer block 32. Immediately however that the pressure from the rod 31 is released the hammer falls, and the cross rod 20 is brought back to zero, ready for a repeat movement. Lest in such return movement it should happen that the blocks 21 should not readily free themselves from the grooves 17, the cam blocks are made (as described) with the oppositely parallel acting surfaces 27^a and 27^b so as to insure a positive movement in both directions of the arms 18.

Referring now more particularly to Figs. 3 and 4, it will be seen that the driving clutch mechanism may be used in the single

clutch character, when required only for light hammers. In this case the boss of the arm 18^a is furnished with a central round hole to freely fit the shaft 13, and therefore
 5 is not slidable but used only that its outer end 18^b may serve as a fulcrum to the cross rod lever 20^a (which in this case is substituted for the cross rod 20 aforesaid), its other end being connected up to the slidable
 10 arm 18 as before. The operation from the rod 31 in this case will be clearly understood from the description already given.

When a single pulley 16 only is used, the rope 15 may lie upon the bottom of the
 15 groove 17, but here again we provide that such a surface should not frictionally rub the underside of the lifting band. This may be done for instance, as shown in Figs. 8 and 9, in which revoluble rollers 33 are
 20 mounted on the pulley 16 between it and the idle pulley ring 34 in such a manner that the rope is carried on such ring. It will also be readily seen that if desired the said
 25 singly used pulley 16, as immediately above referred to, may be of the solid kind shown in Fig. 2, and an idle pulley 14 placed at its one side between it and the non-slidable arm 18^a on which the rope or band may rest.

We are aware that it has already been pro-
 30 posed to operate such hammers by means of a radial lifting arm being made to frictionally cause a brake like block to bear upon the flat surface of a revolving pulley, but in such cases the lifting band has rested upon
 35 the moving pulley, and has caused a wearing action upon such band.

What we claim as our invention and desire to secure by Letters Patent is:—

1. In lifting mechanism for drop ham-

mers, a shaft rotatable in one direction, a
 40 hoisting pulley mounted on the shaft for rotation therewith, a hammer block, a cable carrying the hammer block, a pulley freely rotatable about the shaft as a center and
 45 over which the cable is trained, a cross piece to which the end of the cable is attached, the cross piece having means to frictionally engage the hoisting pulley and being movable
 50 to establish or disestablish such engagement, and arms to which the cross piece is connected, the arms surrounding the shaft.

2. In lifting mechanism for drop hammers, a shaft rotatable in one direction, a
 55 pair of hoisting pulleys mounted on the shaft for rotation therewith, a freely revoluble pulley arranged between the hoisting pulleys, a hammer block, a cable carrying the hammer block and trained over the
 60 freely revoluble pulley, a cross piece to which the end of the cable is attached, the cross piece having means to frictionally engage the hoisting pulleys and being movable
 65 to establish or disestablish such engagement, arms surrounding the shaft, radially movable with respect thereto, and connected to the cross piece, the movement of the latter
 aforesaid being consequent to the movement of the arms, and means for producing the
 70 movement of the arms in either direction.

In testimony whereof we have hereunto
 set our hands in the presence of two sub-
 scribing witnesses.

BERNARD BRETT.
 JOHN BRETT.

Witnesses:

J. BERNARD HAYWARD,
 N. GOODWIN.