F. W. DAEUBLE.

REVERSING FRICTIONAL DRIVING MECHANISM.

APPLICATION FILED MAY 24, 1911.

1,013,989.

Patented Jan. 9, 1912.

4 SHEETS—SHEET 1.

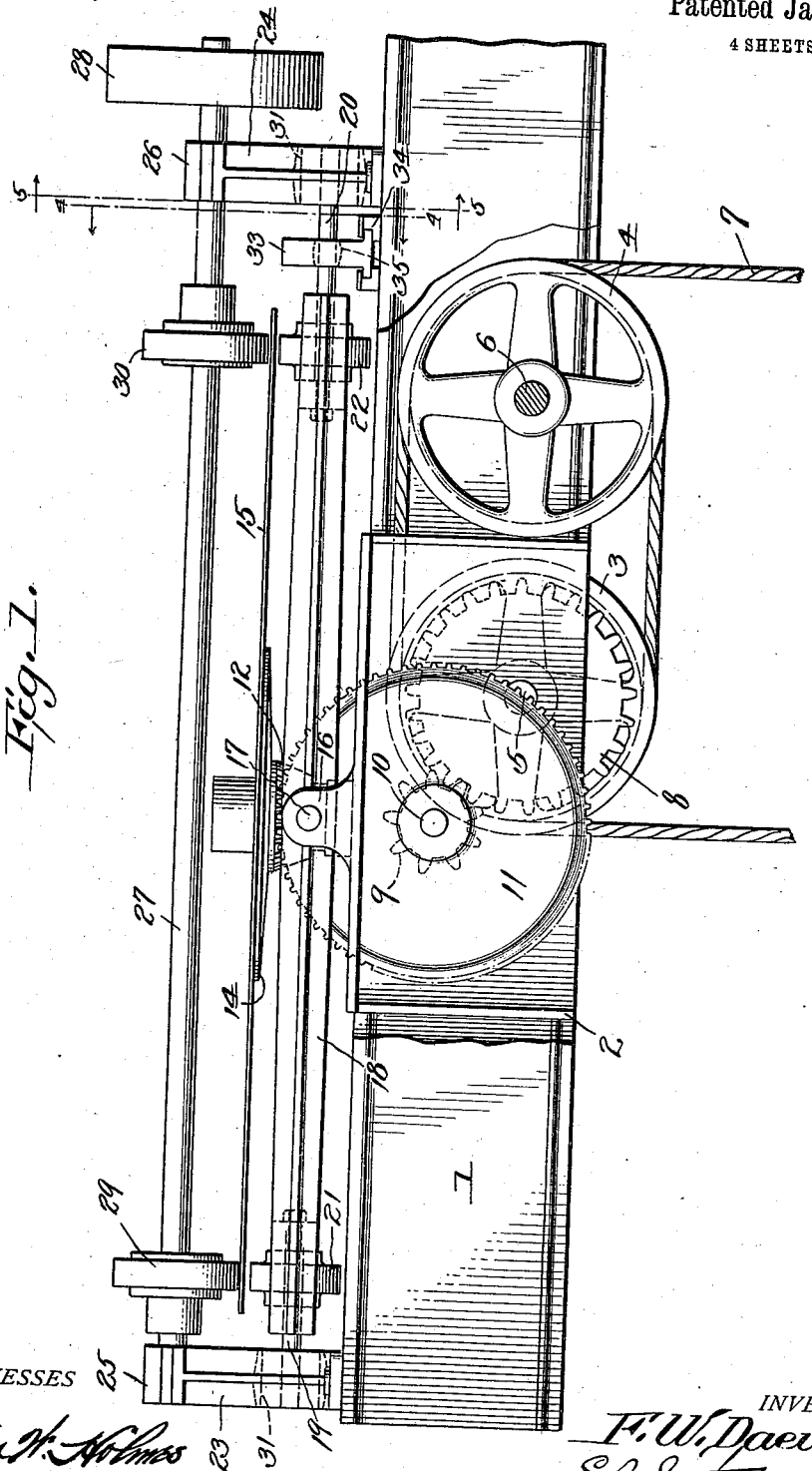

Fig. 1.

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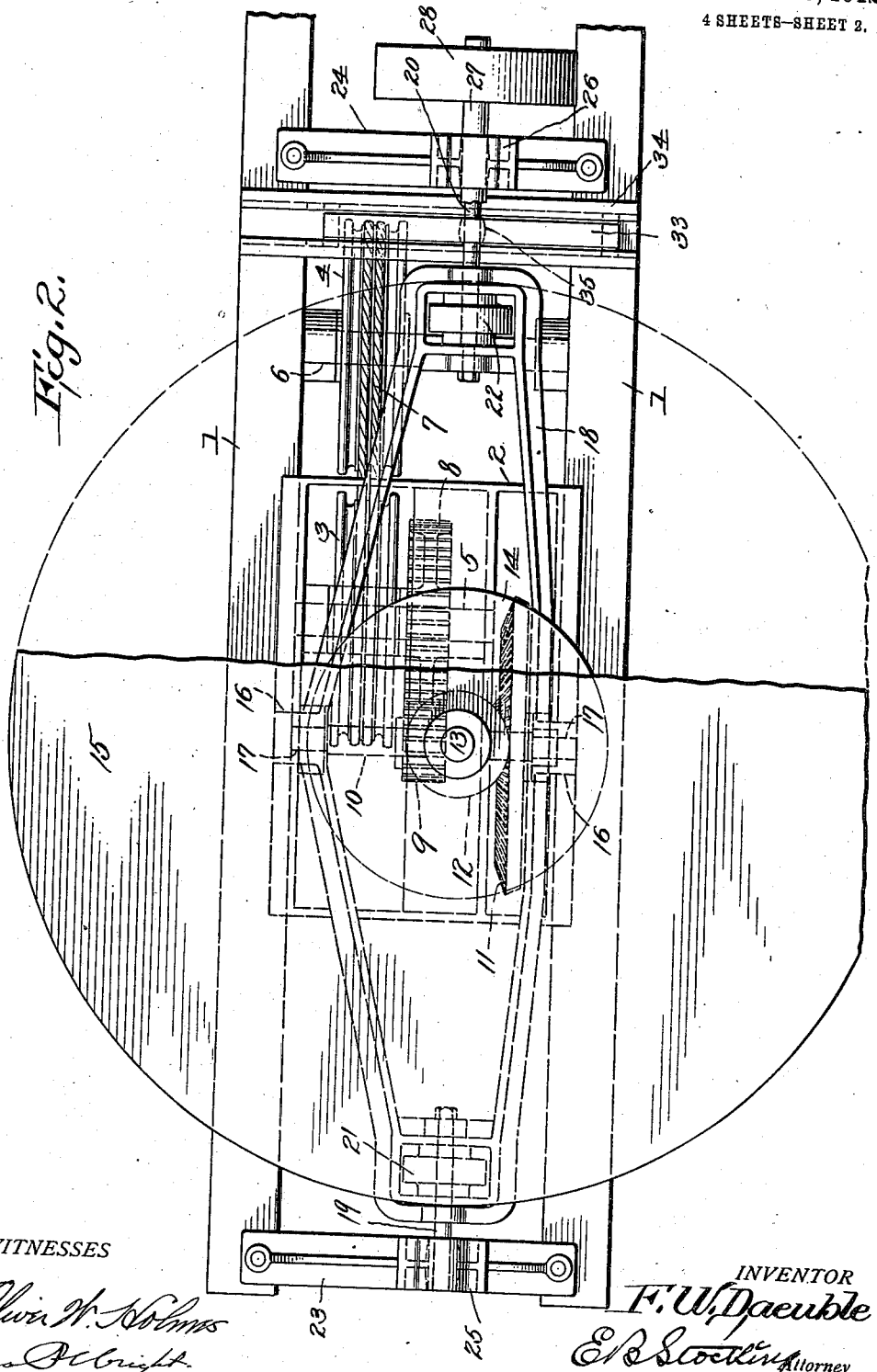
Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

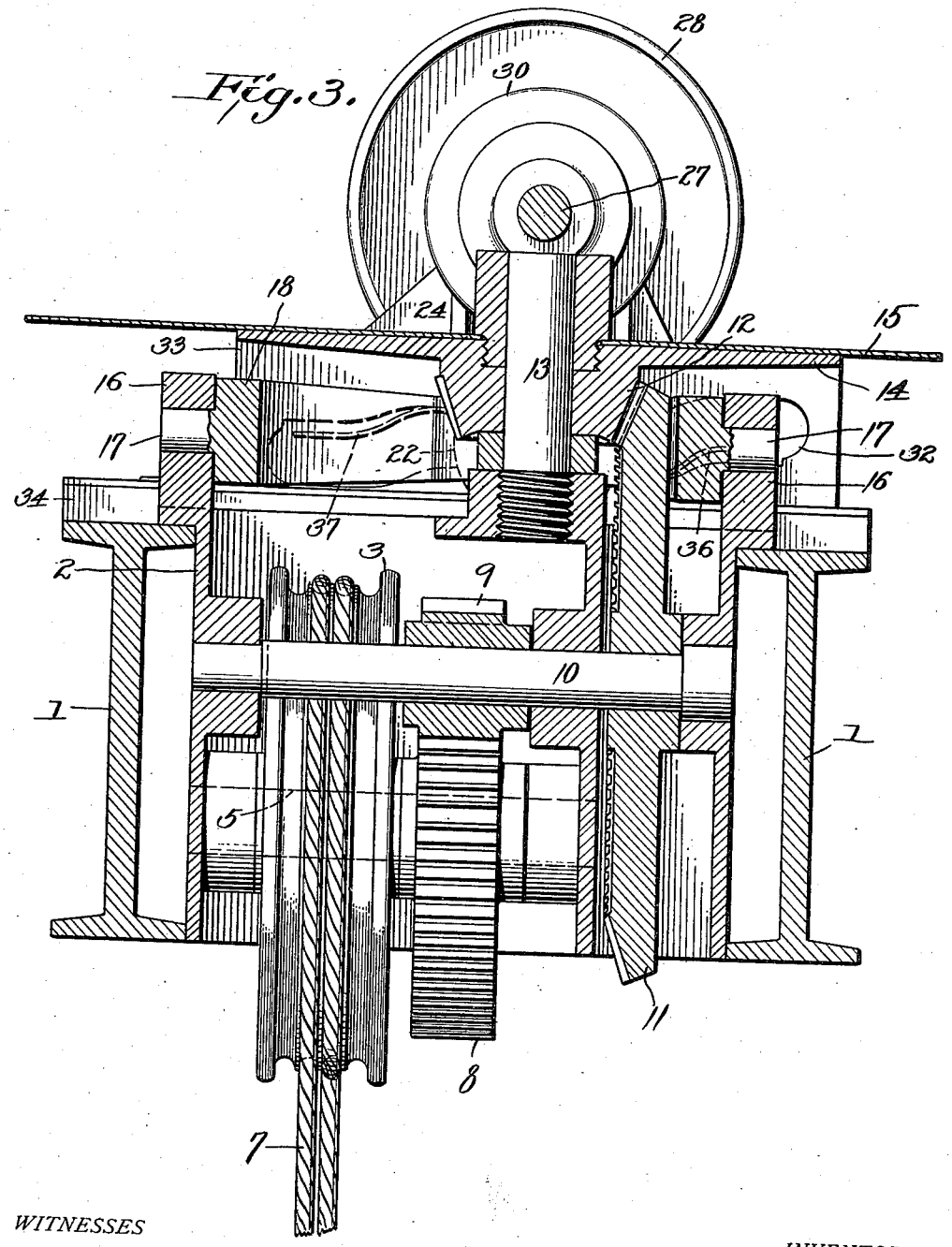

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Fig. 4.

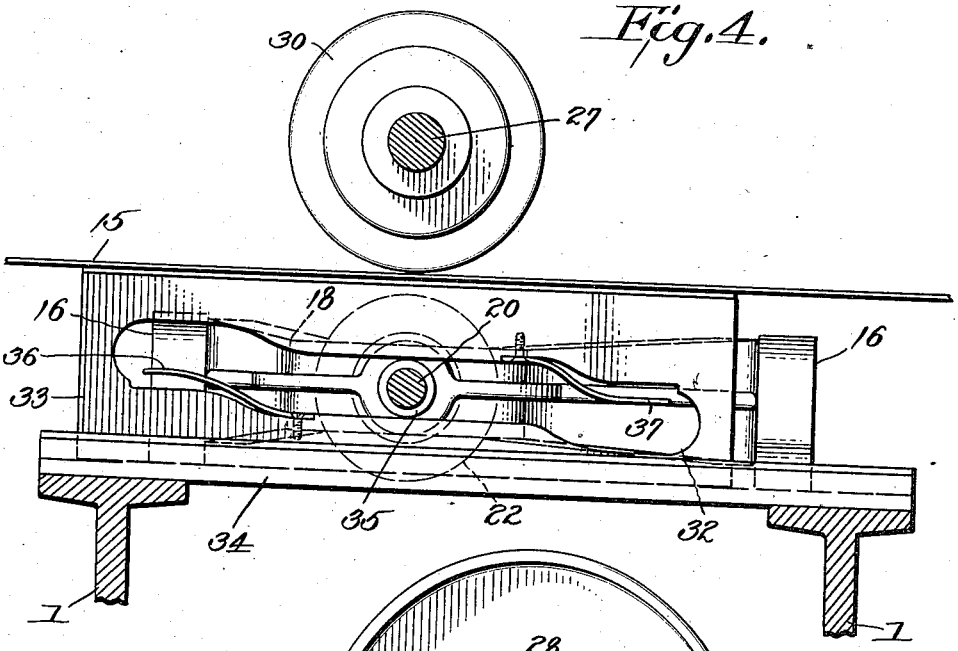
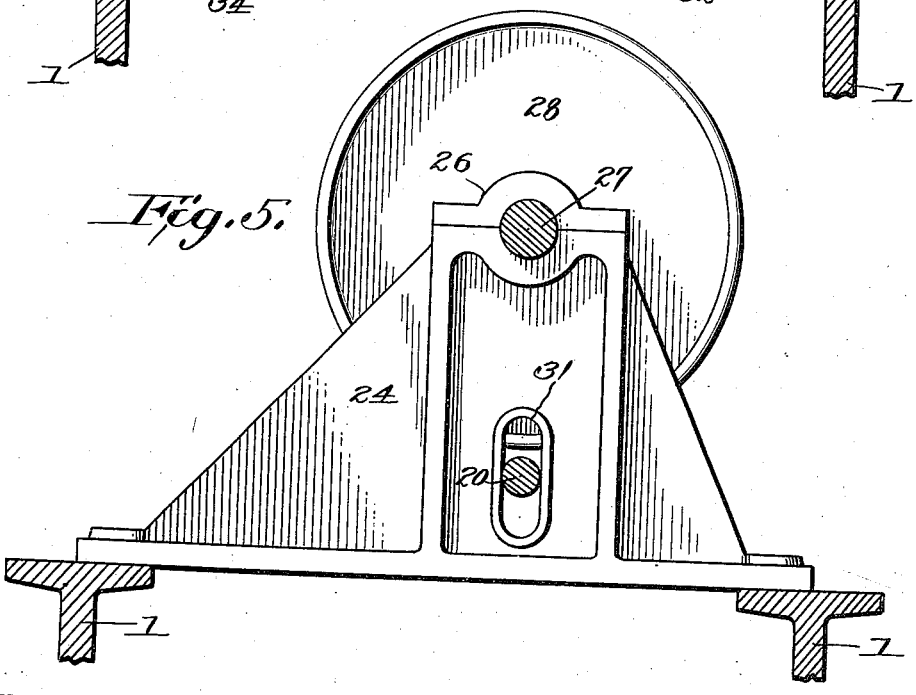


Fig. 5.



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UNITED STATES PATENT OFFICE.

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REVERSING FRICTIONAL DRIVING MECHANISM.

1,013,989. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed May 24, 1911. Serial No. 629,175.

To all whom it may concern:

Be it known that I, FREDERICK W. DAEUBLE, a citizen of the United States, residing at Buechel, county of Jefferson, State of Kentucky, have invented certain new and useful Improvements in Reversing Frictional Driving Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in reversing frictional driving mechanism adapted to be used in connection with hoisting apparatus and especially in connection with hand and power elevators, the object being to provide a driving mechanism in which the movement is transmitted from the driving shaft to the driven shaft through the medium of a flexible friction disk.

Another object of the invention is to provide novel means for mounting the frictional disk in order to allow the frictional engaging surface of the same to be forced into engagement with either of the driving disks so as to drive the hoisting mechanism in either direction.

A still further object of the invention is to provide a rock frame having idle rollers opposite the driving disks whereby said disks can be forced into engagement with either of the driving members for rocking said frame in order to reverse the rotation of the disk.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings—Figure 1 is a side elevation of my improved reversing frictional driving mechanism, partly broken away, in order to show the connection and manner of mounting the hoisting drums; Fig. 2 is a top plan view of the same partly broken away; Fig. 3 is a vertical transverse section; Fig. 4 is a section taken on line 4—4 of Fig. 1; and Fig. 5 is a section taken on line 5—5 of Fig. 1.

Like numerals of reference refer to like parts in the several figures of the drawings.

In the drawings, 1 indicates a pair of supporting beams which may be of any desired configuration and arranged in any suitable manner, on which is mounted a frame 2 having a pair of spaced annularly grooved winding drums 3 and 4 fixed on suitable shafts 5 and 6 over which is wrapped a hoisting cable 7 to one end of which is adapted to be connected a weight and to the other end an elevator car, not shown. The shaft 5 carries a gear 8 meshing with a pinion 9 keyed on a shaft 10 mounted within the frame which is provided with a beveled gear 11 for driving the same which meshes with a beveled pinion 12 mounted upon a vertical shaft 13 fixed in the frame, as clearly shown. It will be seen that when the pinion 12 is rotated, the winding drum 3 will be driven through the medium of the gears in order to wind or unwind the cable to raise or lower the car.

The pinion 12 is provided with an enlarged disk portion 14 on which is fixed a flexible frictional disk 15 formed of any suitable material which will yield for the purpose later described.

Extending upwardly from the frame 2 in vertical alinement with the shaft 10 and in transverse alinement with the shaft 13 are bearings 16 in which are mounted trunnions 17 of a rock frame 18 which is provided with longitudinal shafts 19 and 20 at its ends on which are loosely mounted idle disks 21 and 22 adapted to engage the under surface of the flexible driven disk 15 when the frame is rocked.

Arranged on the beams 1 are standards 23 and 24 having bearings 25 and 26 at their upper ends in which is journaled a driving shaft 27 having a pulley 28 at one end over which a belt from the motor is adapted to pass for driving the shaft, it, of course, being understood that any other driving gear may be employed as desired. Fixed on the driving shaft 27 are frictional driving disks 29 and 30, the disks being so arranged in respect to the flexible disk 15, that when said disk 15 is forced into engagement with the disks 29 and 30, they will engage the flexible disk adjacent its edge at each side of its center in order to allow the disk 15 to be driven in either direction by forcing the disk into engagement with the driving disks.

The shafts 19 and 20 extend outwardly beyond the frame 18 and are mounted in suitable guide ways 31 formed in the standards 23 and 24, the shaft 20 extending through a cam shaped slot 32 formed in a slidably mounted shifting member 33, said member being preferably mounted in guide ways 34, as clearly shown, and can be operated by any suitable mechanism. Fixed on the shaft 20 within the slot 32 is an anti-

friction roller 35 adapted to be engaged by the frictional spring members 36 and 37 when said shifting member is moved in order to hold the same in position within the slot. It will be seen that when the anti-friction roller 35 is in the position shown in Fig. 4, the flexible disk 15 will be held a slight distance away from the driving disks 29 and 30 and by shifting the member 33, the frame 18 will be rocked upon its bearings so as to force either the idle roller 21 or the idle roller 22 into engagement with the under side of the flexible disk 15 which will yield so as to be forced into frictional contact with one of the driving disks, whereby said disk will be driven, which, in turn, through the gears will drive the drums. When the flexible disk 15 is forced into engagement with the driving disk 29, it will be driven in one direction and when forced into engagement with the driving disk 30, it will be driven in a reverse direction, whereby the driving mechanism may be easily and quickly shifted.

While I have not shown a brake, it is, of course, understood that any suitable form of brake may be employed as desired.

From the foregoing description, it will be seen that I have provided a reversing frictional driving mechanism which is exceedingly simple and cheap in construction and one which can be readily applied to a hoisting apparatus of a hand or power elevator whereby the movement of the winding drums can be reversed smoothly so as to avoid any sudden jerk and at the same time a positive drive is formed. It will also be seen that I have provided novel means for rocking the frame in order to force the flexible disk into engagement with the frictional driving disks, tension means being provided for holding the rock frame in its adjusted position.

Having described my invention and set forth its merits, what I claim and desire to secure by Letters Patent is—.

1. In a frictional driving mechanism, the combination with a pair of driving members, of a flexible driven member, and means for forcing said flexible member into engagement with either of said driving members.

2. In a reversing frictional driving mechanism, the combination with a pair of frictional driving members, of a flexible driven member, a rock frame, and rollers carried by said rock frame for forcing said frictional member into engagement with either of said driving members.

3. The combination with a pair of driving members, of a flexible driven member, means for forcing said flexible member into engagement with either of said driving members, and shifting mechanism for operating said means.

4. The combination with a pair of driving members, of a flexible driven member capable of engaging either of said driving members, and means for forcing said driven member into engagement with either of said driving members.

5. The combination with a driving shaft, of a flexible driven member, driving members carried by said driving shaft, rollers arranged to engage said flexible member in alinement with said driving members, and means for moving and holding said rollers into engagement with said flexible member.

6. The combination with a pair of spaced driving members adapted to rotate in one direction, of a flexible disk arranged under said members and normally held out of engagement therewith, a rock frame, rollers carried by said frame, adapted to engage said disk, and a shifting member for rocking said frame.

7. The combination with a pair of driving members, of a flexible driven member, rollers capable of engaging said driven member, and shifting means for moving and holding either of said rollers into engagement with said driven member to hold said driven member into engagement with one of said driving members.

8. In a driving mechanism, the combination with a pair of driving members, of a flexible driven member, a rock frame, rollers carried by said frame adapted to engage said flexible member to each side of its center, and a shifting member for rocking said frame.

9. In a driving mechanism, the combination with a pair of driving members, of a flexible driven member normally held out of engagement with said driving members, a rock frame, rollers carried by said frame for engaging and forcing said flexible member in engagement with either of said driving members, and a slidably mounted shifting member for rocking said frame.

10. The combination with a driving shaft, of a flexible driven member, frictional driving members carried by said driving shaft adapted to be engaged by said driven member, and means engaging said driven member for forcing said driven member into engagement with either of said driving members.

11. The combination with a pair of frictional driving members, of a flexible frictional driven member, a rock frame, shafts carried by said rock frame, rollers mounted on said shafts, a shifting member having a cam slot to receive the shaft of one of said rollers, and tension springs mounted in said slot for holding said shaft in its adjusted position therein.

12. The combination with a pair of driving members, of a flexible driven member capable of engaging either of said driving

members, a rock frame, rollers carried by said frame for forcing said flexible member into engagement with either of said driving members, and a slidably mounted shifting member for rocking said frame.

13. A reversing frictional driving mechanism comprising a driving shaft, spaced frictional driving members carried by said shaft, a flexible frictional driven member arranged under said driving members, a rock frame mounted under said flexible member, shafts carried by said frame working in guides, rollers carried by said shafts adapted to engage said flexible member, and a shifting member having a cam slot for rocking said frame to force said frictional member into engagement with either of said driving members.

14. A reversing frictional driving mechanism comprising a pair of spaced driving members, a flexible driven member, gearing driven by said member, a rocking member, means carried by a rocking member for engaging said flexible member, and a shifting member for forcing said means into engagement with the frictional member to connect either of said driving members with the driven member.

15. A frictional reversing driving mechanism comprising frictional driving members, a flexible frictional driven member, means for forcing said flexible member into engagement with either of the driving members, and a shifting mechanism for operating said means.

16. In a driving and reversing mechanism, the combination with a pair of driving members, of a flexible driven member normally held out of engagement with the driving members, a rock frame, members carried by said frame for engaging and forcing said flexible member into engagement with either of the driving members, and a slidably mounted shifting member having a cam shaped slot to receive a projection of said frame.

17. In a driving and reversing mechanism, the combination with a pair of driving members, of a flexible driven member normally held out of engagement with said driving members, a rock frame provided with a projection, rollers carried by said rock frame, a slidably mounted shifting member having a cam slot provided with frictional engaging members to receive and engage said projection for holding said rollers into or out of engagement with said flexible member.

18. In a driving and reversing mechanism, the combination with a pair of driving members, of a flexible driven member adapted to engage either of said driving members, a rocking member for forcing said flexible member into engagement with either of said driving members, and a slidably mounted member for rocking said member.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK W. DAEUBLE.

Witnesses:

J. W. SUMMERS,

FRANK M. WILLIAMS.