M. BRETH.

CUSHION POSITIVE CLUTCH.

APPLICATION FILED APR. 24, 1914.

1,126,374.

Patented Jan. 26, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

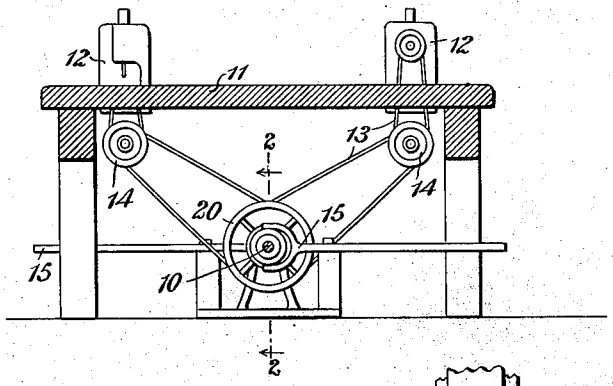


Fig. 2.

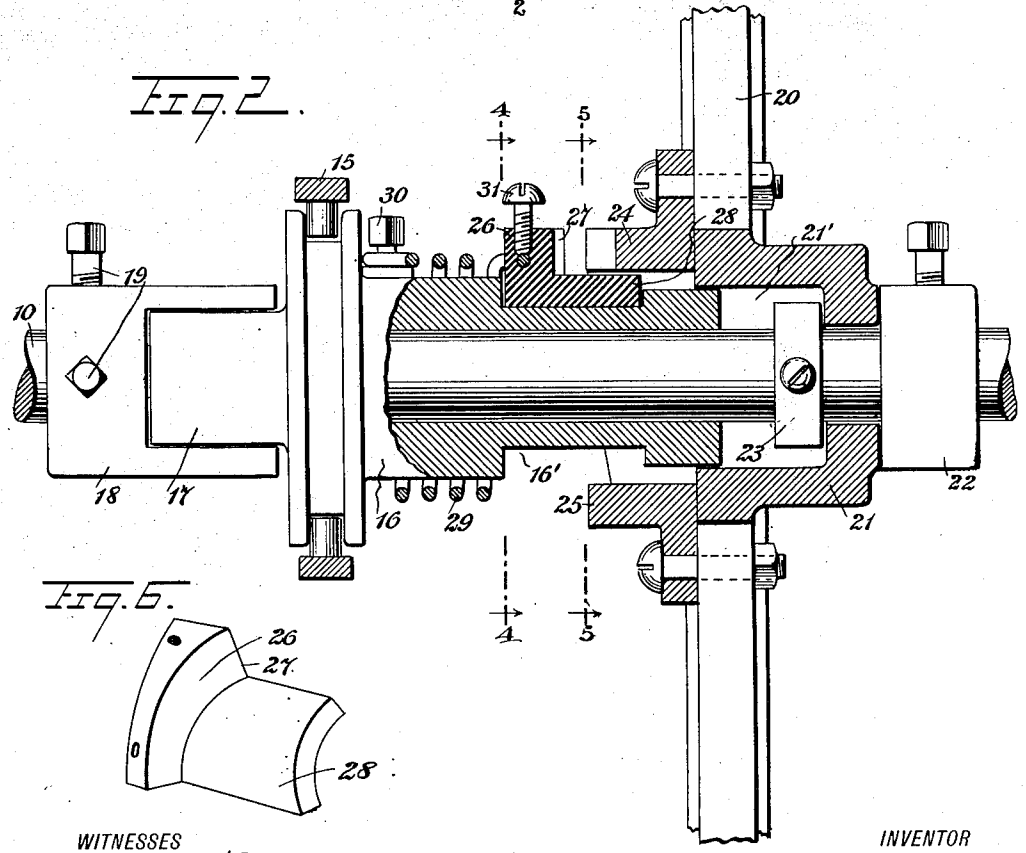


Fig. 6.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

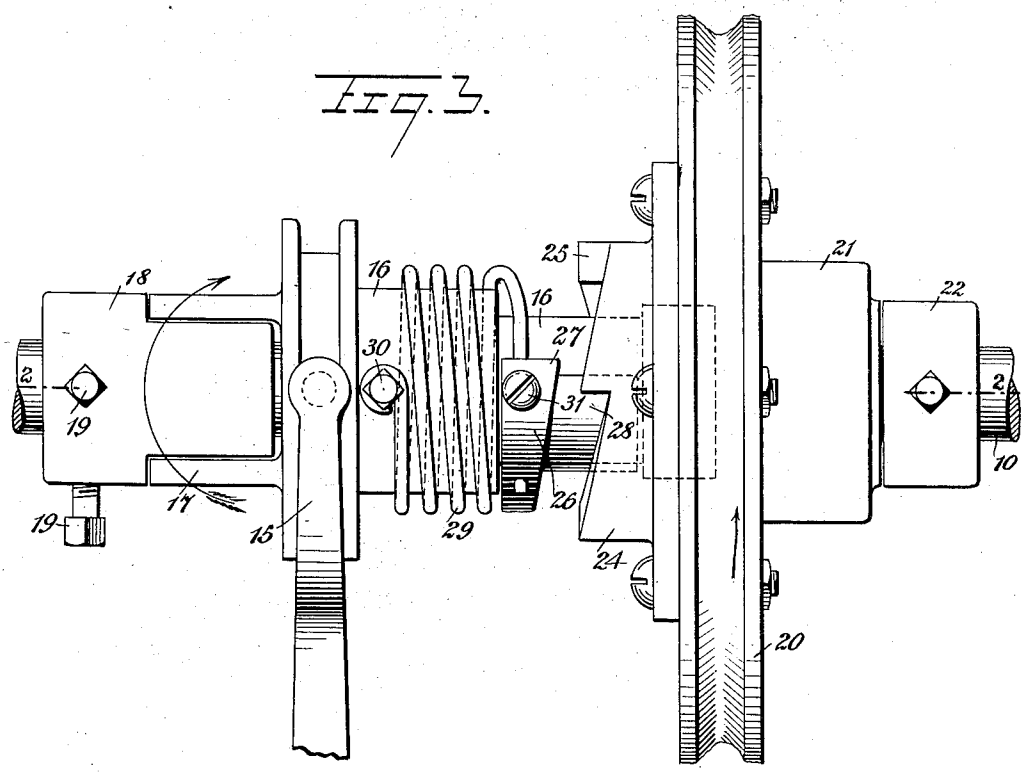


Fig. 4.

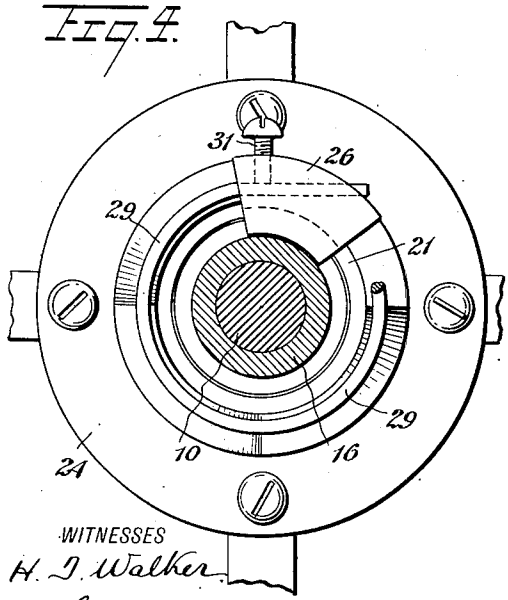
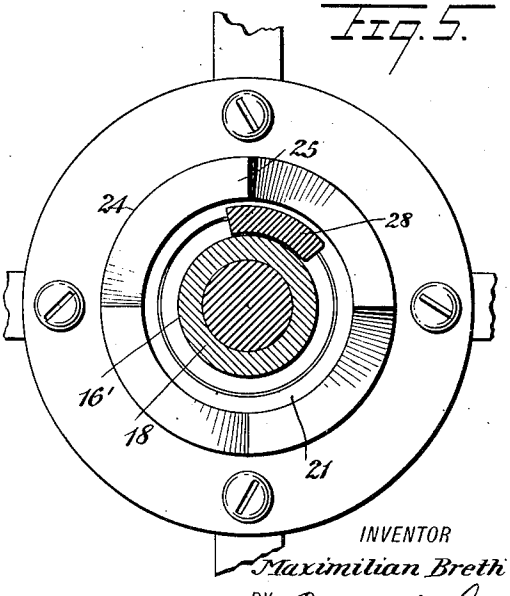


Fig. 5.



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UNITED STATES PATENT OFFICE.

MAXIMILIAN BRETH, OF NEW YORK, N. Y.

CUSHION POSITIVE CLUTCH.

1,126,374. Specification of Letters Patent. Patented Jan. 26, 1915.

Application filed April 24, 1914. Serial No. 834,129.

To all whom it may concern:

Be it known that I, MAXIMILIAN BRETH, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Cushion Positive Clutch, of which the following is a full, clear, and exact description.

This invention relates to power transmission devices, and has particular reference to clutches or means for connecting a running part to another part to be operated.

Among the objects of the invention, more definitely stated, is to provide a shiftable clutch member having driving connection with a constantly running shaft and adapted to engage another clutch element for the purpose of starting a stationary machine, means being provided to cushion the impact whereby the driving shaft, even though operated at a high speed, will not cause an undesirable shock to the driven element.

The foregoing and other objects of the invention will hereinafter be more fully described and claimed and illustrated in the drawings forming a part of this specification in which like characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a vertical sectional view of a bench or table along which a large number of individual machines are arranged and adapted to be driven from a single power shaft; Fig. 2 is a vertical sectional view substantially on the line 2—2 of Fig. 1; Fig. 3 is a plan view corresponding to Fig. 2; Figs. 4 and 5 are vertical transverse sections on the lines 4—4 and 5—5 respectively of Fig. 2; and Fig. 6 is a detail view of one of the clutch elements described below.

The several parts of the device may be made of any suitable materials, and the relative sizes and proportions, as well as the general design of the mechanism, may be varied to a considerable extent without departing from the spirit of the invention hereinafter more fully set forth and specifically claimed.

Referring more particularly to the drawings, I show at 10 a main line power shaft extending along a work table or bench 11 whereupon I arrange any suitable number of individual machines 12 adapted for operation independently of one another from said power shaft. Between the power shaft and each machine 12 is arranged transmission mechanism including any suitable number or arrangement of belts 13 and a pulley 14 or their equivalent. The usual machine shop or factory practice is such that the intermediate transmission devices 13 and 14 are operated constantly from the power shaft 10, though the machine may be idle a large portion of the time. This fact causes an enormous expenditure of power for the reason that in factories where the machines are in actual use, say of but ten per cent. of the time, the power required to operate the idle transmission devices of the other ninety per cent. approximates very nearly the power required to operate ten per cent. of the machines. By this invention, therefore, I am enabled to stop not only each machine, but the intermediate transmission devices therefor and provide means for starting the same again without shock or without delay when the machine is to be operated. Each machine operator is provided with a clutch mechanism including a shifting yoke 15 cooperating with a clutch sleeve 16 slidable within certain limits along the shaft 10 but having constant interlocking connection at 17 with a collar 18 locked to the shaft by any suitable means such as set screws 19.

At 20 I provide a transmission wheel having its hollow hub 21 journaled loosely upon the shaft 10 and held from longitudinal movement thereupon by any suitable means such, for instance, as collars 22 and 23 locked upon the shaft. Secured to the wheel 20 in any suitable manner is a clutch member 24 having teeth 25 projecting toward the yoke 15 and overlapping the adjacent end of the sleeve 16 which projects into the pit 21′ of the hub 21.

At 26 I show a clutch dog of peculiar nature and construction, the same having a tooth 27 adapted to engage any one of the teeth 25. Said dog also includes a lip 28 fitted loosely within a groove 16′ of the sleeve 16 and projecting within the clutch element 24. The lip portion of the dog, as shown in Figs. 5 and 6, constitutes a portion of a hollow cylinder and being fitted against the bottom of the groove 16′ is adapted to rotate independently of the sleeve and shaft 10. The dog, however, is prevented from longitudinal or radial displacement with respect to the sleeve 16.

A flexible member of any suitable character shown as a coil spring 29, is interposed between the sleeve 16 and the dog 26. This

spring 29 is shown anchored at one end upon a stud 30, and after being coiled loosely around the main portion of the sleeve has its opposite end projected through the body of the dog 26 where it is adjustably secured by a set screw 31.

Upon manipulation of the yoke lever 15 the sleeve 16 will be forced toward the wheel 20, bringing the dog 26 into engagement with one or another of the teeth 25 but without separating the clutch element 17 from the collar 18. It being understood that the shaft 10 is in constant rotation at high speed, the engagement of the clutch dog 26 with the clutch 24 will have a tendency to start the rotation of the wheel 20 and the machine 12 associated therewith through the transmission devices 13 and 14. The shaft 10 being heavy and driven at a continuous speed, a direct positive connection between the same and the wheel 20 would tend to be disastrous to the stationary mechanism because of the inertia of rest of the same but for the resiliency of the connection 29. Since the teeth 25 and 27 come into engagement, the rotation of the main shaft winds up or puts under tension the spring 29, such tension becoming gradually more tense until the strength of the spring is sufficient to start the individual machine 12 and continue such operation so long as the clutch elements remain in contact. Obviously, also, a secondary function of the spring 29 is to provide a steady and easy operation of the machine; that is to say, any obstacle or unusual demands made upon the individual machine may be overcome gradually by the automatic tightening up upon the spring. When the yoke 15 is thrown in the opposite direction to stop the machine 12, the sliding of the sleeve 16 will carry with it positively the clutch dog 26 by reason of the engagement between the end of the lip 26 and the right hand wheel bounding the groove 16'.

By the use of this invention the sanitation of a factory or shop is materially improved, since much of the dust under prior conditions is generated and kept in circulation by the idle running transmissions.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a device of the character set forth, the combination with a constantly running shaft and a clutch collar secured thereto, of a sleeve slidably mounted upon the shaft and having rotary driving connection with said collar, a wheel journaled loosely upon the shaft and held from longitudinal movement thereon, said wheel having one or more clutch teeth projecting toward said collar, a clutch dog carried by the sleeve and slidable therewith along the shaft toward and from said wheel, said dog having a tooth adapted to engage a tooth of the wheel, and a flexible member interposed between the sleeve and the dog to control the rotation of the dog and sleeve independently of each other within certain limits.

2. The combination with a constantly running power shaft and a clutch sleeve slidable longitudinally thereon but held from independent rotation on the shaft, of a wheel having clutch teeth projecting toward the sleeve, a clutch dog mounted upon the sleeve and slidable therewith positively in either direction but free for certain rotation independently thereof, and a coil spring secured at one end to the sleeve and at its other end to the dog, substantially as set forth.

3. In a device of the character set forth, the combination with a constantly running shaft and a clutch sleeve slidable thereon, but held from rotation independently of the shaft, of a wheel having a hollow hub journaled loosely upon the shaft but held from longitudinal movement thereon, the end of the sleeve projecting within the hollow hub, a clutch element projecting laterally from the wheel over the sleeve and having a series of teeth, said sleeve having a circumferential groove, a clutch dog fitted loosely in said groove and including a lip projecting within the clutch element and also having a tooth adapted to engage one of the clutch element teeth, and a resilient member interposed between the sleeve and said dog, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAXIMILIAN BRETH.

Witnesses:
GEO. L. BEELER,
PHILIP D. ROLLHAUS.