

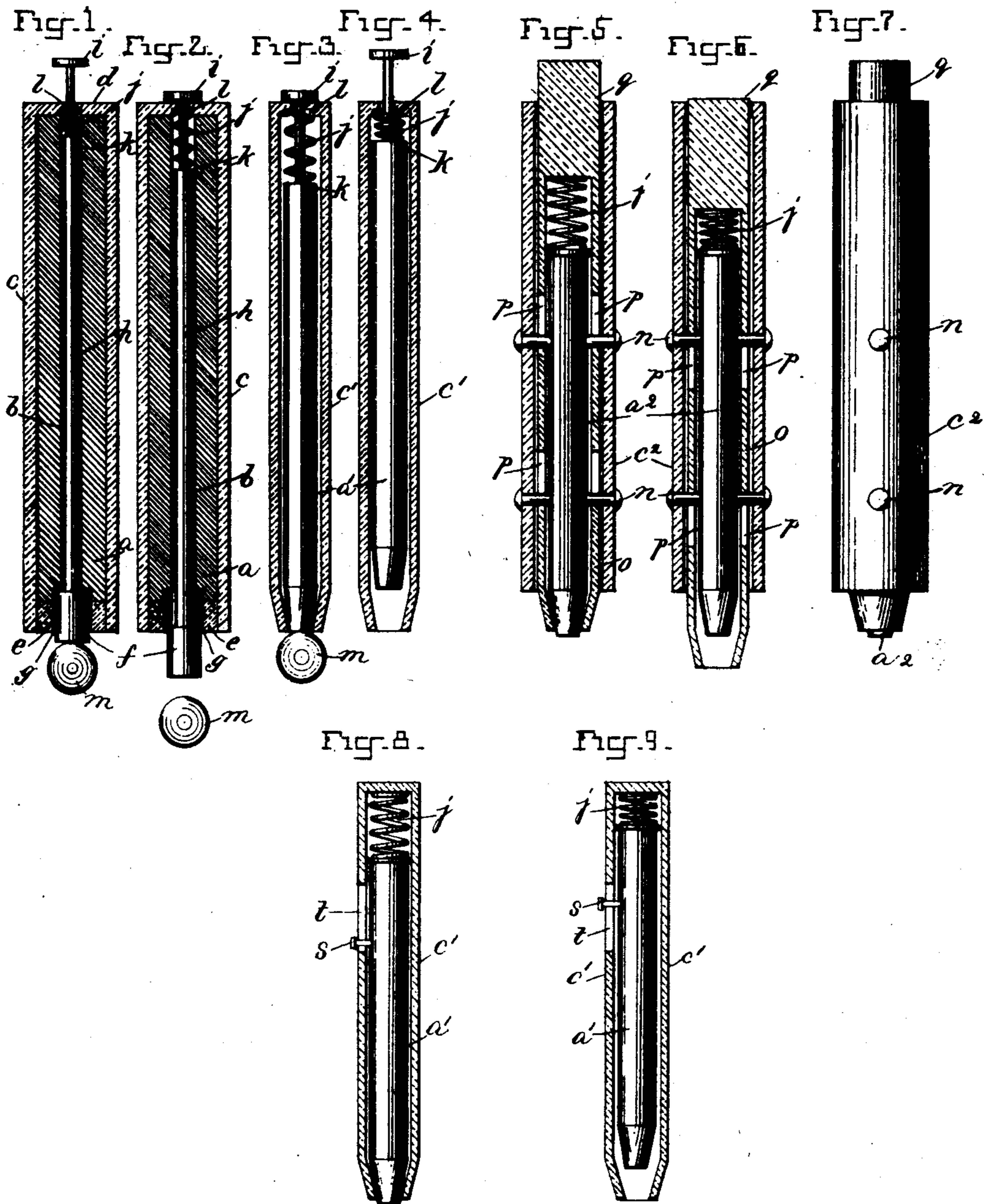
(No Model.)

J. T. KEYES.

TOOL FOR HANDLING SMALL METALLIC ARTICLES.

No. 512,381.

Patented Jan. 9, 1894.



WITNESSES:

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TOOL FOR HANDLING SMALL METALLIC ARTICLES.

SPECIFICATION forming part of Letters Patent No. 512,381, dated January 9, 1894.

Application filed April 12, 1893. Serial No. 470,088. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. KEYES, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented new and useful Improvements in Tools for Handling Small Steel and Iron Articles, of which the following is a specification.

The object of my invention is more particularly to provide a tool for picking up and handling small spherical objects as the steel balls of bicycle wheel ball bearings which are very difficult to handle by the fingers, but which tool will also be very useful for handling various other small objects of steel and iron, and it consists essentially of a magnetized bar or core adapted for picking up and holding said articles by attraction, and a non-magnetic discharger for detaching the articles when they are to be released, all as hereinafter fully described reference being made to the accompanying drawings in which—

Figures 1 and 2, are sectional elevations of one form of my improved tool, Fig. 1 showing the conditions for picking up and holding the ball, and Fig. 2, showing the position for releasing the ball. Figs. 3 and 4, are sectional elevations of another form of the said tool; Fig. 3, showing the conditions for holding the ball, and Fig. 4 showing the conditions for releasing it. Figs. 5 and 6 are like views of another form of the tool and showing the different positions. Fig. 7, is a side elevation of the form of the tool represented in Figs. 5 and 6, and Figs. 8 and 9, are sectional elevations of another form, Fig. 8 showing the conditions for holding the ball, and Fig. 9 the conditions for releasing it.

However the tool is constructed the essential features of it are a magnetic bar or core for lifting the objects by attraction, and a non-magnetic discharger for detaching them which are readily movable relatively to each other to permit the magnet to be presented in suitable proximity to the articles for taking them up by attraction, and for removing the articles out of the field of magnetic attraction for releasing them.

In Figs. 1 and 2, *a* represents a magnetized core of the tool having a central longitudinal bore *b*, and being inclosed in a tubular stock

or handle *c*, of non-magnetic substance having a head *d*, at one end and being closed with a non-magnetic plug *e*, at the other end to secure the core; *f*, is a piece of soft iron fitted to slide in and out of a socket *g*, in the plugged end of the stock; *h*, is a rod extending up through the core *a*, and the head of the stock and having a head *i*, above by which to pull the piece of soft iron inward of the socket, and *j* is a coiled spring applied to the rod *h*, between the shoulder *k* thereof, and a shoulder *l*, of the head of the stock suitable for projecting the soft iron piece *f*, outward of the socket. In the operation of this form of the tool the soft iron piece is drawn upward into the socket as in Fig. 1 through lifting it by the head of rod *h*, in which position it is temporarily magnetized by the magnetic core *a*, and will pick up small steel or iron objects as balls *m*, and hold them for use, and when the head *i*, is released and the rod let go the soft iron piece *f*, being projected by the spring outward from the socket *g* beyond the magnetic influence of the core *a*, will release and effect the discharge of the objects holding it.

In Figs. 3 and 4, the magnetic core *a'* is arranged to slide in the stock *c'* so that the end for use in picking up the objects may be flush with the end of the stock for taking effect, as in Fig. 3, and may be withdrawn a suitable distance within the end of the stock as in Fig. 4 for releasing the balls. The lifting head *i* and the spring *j* are in this case applied to the magnetic core, said core having the shoulders *k* for the spring, the other shoulder for said spring being on the head *d* of the stock same as in Figs. 1 and 2. The other end of the stock and the corresponding end of the core are tapered a little to limit the outward thrust of the core by the spring, but any other approved means of effecting such limitation may be employed. In this form of the tool the core is pressed downward by the spring to the position for effective use as in Fig. 3, and it is lifted up by the head as in Fig. 4, for the release of the objects being handled, by withdrawal of the end so far within the case that the objects, prevented from following it by the end of the stock, will be relieved of the magnetic influence.

In Figs. 5, 6 and 7 the magnetic core a^2 is made fast to the stock c^2 , by the studs n , with an intermediate sliding tube o , having slots p , for the studs and containing a spring j' above the upper end of the core tending to shift it upward, also having the upper end q extending above the stock a suitable distance to serve for pressing the tube downward by the finger, and also having the lower end in suitable relation to the operative end of the magnet for allowing it to take effect when raised by the spring on the objects to be handled, and for discharging them when pressed down.

In Figs. 8 and 9, the stock c' , core a' and spring j , are substantially the same as in Figs. 3 and 4, with a stud s , projecting through a slot t , in the side of the stock for raising the magnet for discharging the objects held by it.

It is manifest that besides these various forms of the tool other equivalent forms may be made.

I claim—

1. The combination of the magnetic bar or core and the non-magnetic discharger movable relatively to each other for permitting the core to be presented to the objects to be

handled, and for detaching said objects by the discharger substantially as described.

2. The combination of the magnetic bar or core, the non-magnetic discharger and a stock or handle, said core and discharger movable relatively to each other for presenting the core to the objects to be handled, and for detaching said objects by the discharger substantially as described.

3. The combination of the magnetic bar or core, the non-magnetic discharger movable relatively to each other for presenting the core to the objects to be handled, and for detaching the said objects by the discharger, a spring for effecting the movement in one direction and a push-piece for effecting reverse movement substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 8th day of April, 1893.

JAMES T. KEYES.

Witnesses:

W. J. MORGAN,
C. E. WHITNEY.